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A century of ferns

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A

CENTURY OF FERNS;

BEING

FIGURES WITH BRIEF DESCRIPTIONS

OF

One Hundred

NEW, OR RARE, OR IMPERFECTLY KNOWN SPECIES OF

FERNS,

FROM VARIOUS PARTS OF THE WORLD;

A SELECTION FROM THE AUTHOR'S "ICONES PLANTARUM,"

BY

SIR WILLIAM JACKSON HOOKER, K.H.,

LL.D., F.R.A., AND L.S., &c. &c.,

DIRECTOR OF THE ROYAL BOTANICAL GARDENS, KEW.

LONDON:
WILLIAM PAMPLIN, 45, FRITH STREET, SOHO SQUARE.

MDCCCLIV.

10 Oct. 1918

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TAB. I.

CHEILANTHES CHRYSOPHYLLA, *Hook.*

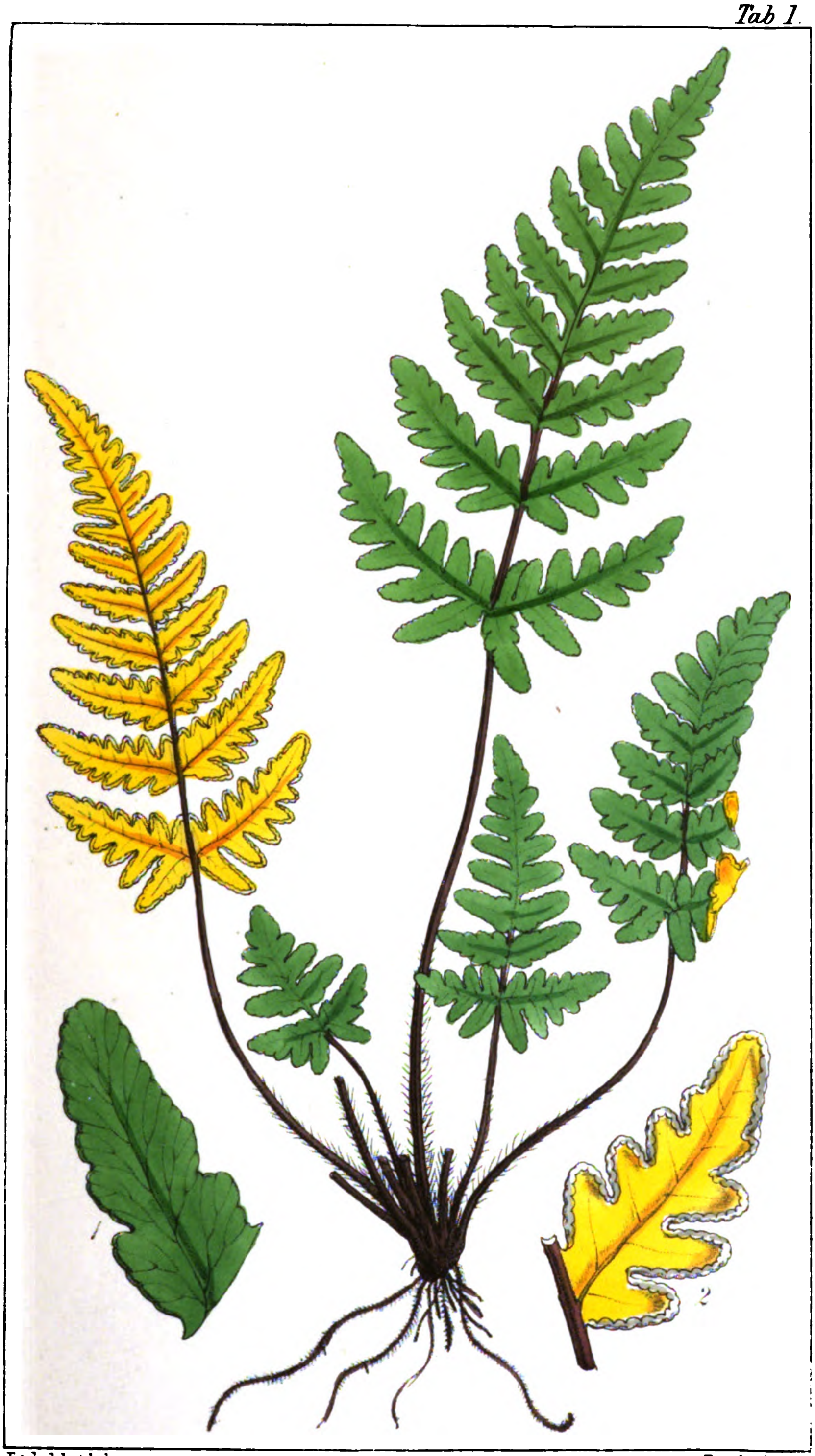
Cæspitosa, radice fibrosa, stipitibus 2-5 purpureo-ebeneis pilis longis subulatis paleaceis inferne præcipue hispidis, frondibus pinnatis subcoriaceis deltoideo-acuminatis 3-4 uncialibus supra glabris subtus furfuraceis aureo-flavis, pinnis lanceolatis paribus infimis deltoideis omnibus pinnatifidis, segmentis ovatis crenulatis inferioribus pinnarum infimarum oblongis subsinuatis, involucris e margine reflexo frondis continuis usque ad apices crenulatis, marginibus membranaceis nudis (non ciliatis).
Cheilanthes chrysophylla, *Hook. Gen. et Spec. Fil.* 2. *p.* 13.

Hab. Bare rocks, Kala-Panee, Khasya, *Drs. Hooker and Thomson.*

Of this rare species we have only seen specimens of Messrs. Hooker and Thomson from the above locality. It has much general affinity with *Cheilanthes farinosa,* Kaulf. (Hook. et Grev. Ic. Fil. t. 134), but, independently of the colour of the powdery substance on the underside of the frond, (white *in Ch. farinosa*), the involucres are very different; in *Ch. farinosa* wholly membranaceous, nearly orbicular, and more or less united at the base, (in that sense often continuous), whereas here the involucres seem to be formed of the reflexed margin of the frond itself, of the same texture, altogether continuous, and though crenulated, never ciliated at the edge. The crenulated involucres may be considered to justify the placing of this species in *Cheilanthes,* rather than in *Pteris* or *Allosorus.*

Fig. 1. Upper side of a fertile lobe of a lower pinna. *f.* 2. Fertile pinna seen from beneath:—*magnified.*

Tab 1.



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Pamplin imp

TAB. II.

ONYCHIUM MELANOLEPIS, *Dcne.*

Caudice brevi subrepente squamis rigidis appressis nigris paleaceo, stipitibus cæspitosis 3-6 uncialibus gracilibus rachibusque subflexuosis canaliculatis glabris nitide stramineis (in sicco), fronde membranacea 3-6-unciali costata glabra pallide virente ovata triplicato-pinnatisecta, laciniis sterilibus angusto-cuneatis 3-5 fidis incisis, laciniis sublinearibus acutis, fertilibus oblongis cuspidatis, involucris pallidis membranaceis linearibus longitudine fere laciniarum, apicibus sterilibus.

Onychium melanolepis, *Dcne. Pl. de l'Arabie Heur. Archiv. du Mus.* 2 *p.* 189. *Kze. in Schkuhr, Fil. Suppl.* 2. *p.* 9. *t.* 104. *f.* 2. *Hook. Gen. et Sp. Fil.* 2. *p.* 124.

Cheilanthes leptophylla, *Br. in Salt's Abyss. App.* iv. *p.* lxv., (*name only.*)

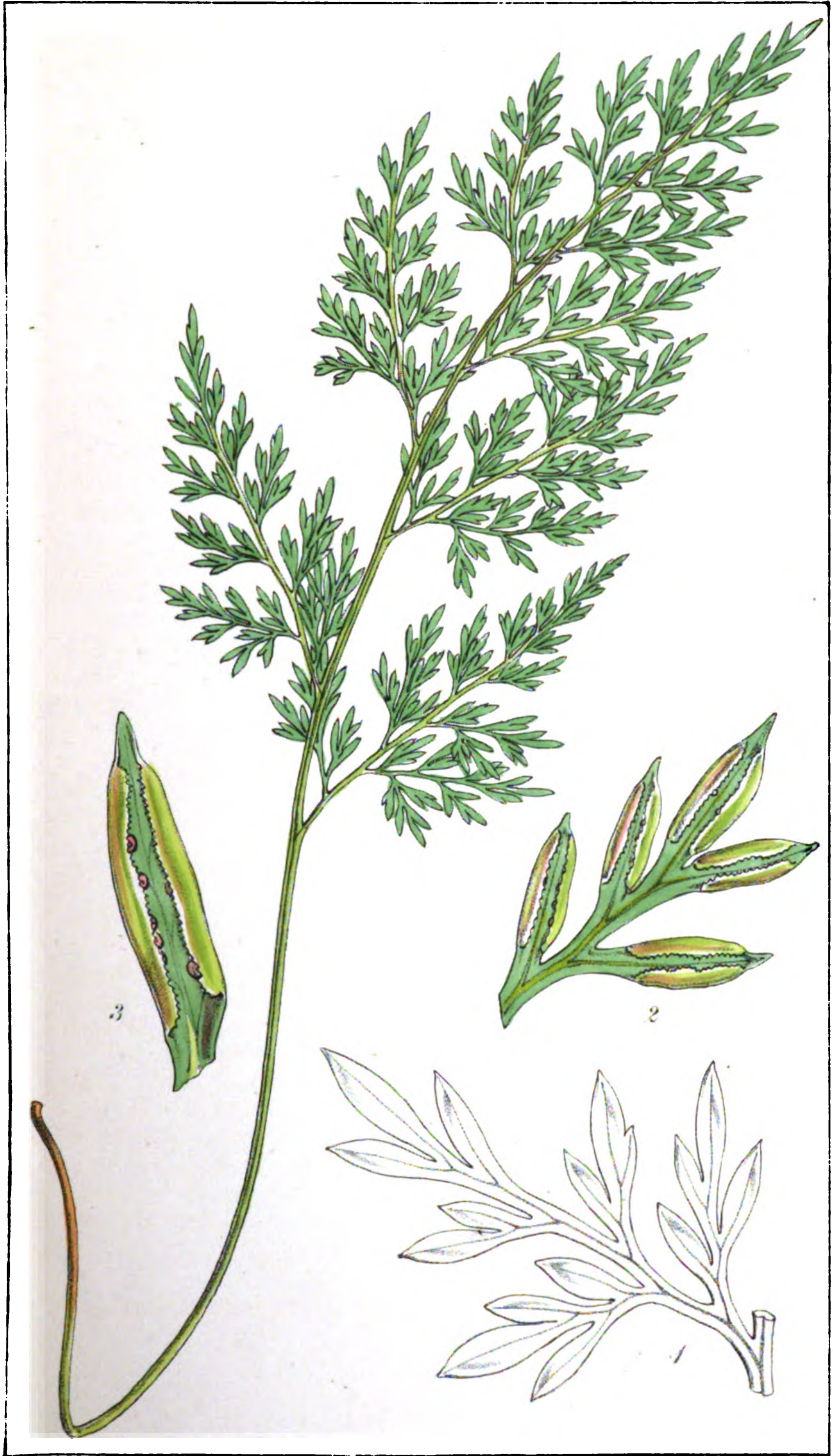
Allosorus cuspidatus, *Jaub. et Spach. Illustr. Pl. Or.* 3. *p.* 1. *t.* 201.

HAB. Abyssinia, *Salt, H. Schimper,* n, 1672. South Persia, rock of Mount Pire-zend, between Shiraz and Kazeroum, *Aucher-Eloi,* n. 5488. Caves in the Island of Kareh, Persian Gulph, and at Dalechy, *Kotschy, n.* 10 and 198.

My first knowledge of this plant was from the specimens of Aucher-Eloi in my possession. On finding it to be identical with Mr. Brown's *Cheilanthes leptophylla* of Salt's plants in the Banksian Herbarium, I was anxious to figure it; which done, and not till then, I discovered that it was, under other names, represented in Kunze supplement to Schkuhr's Filices, as well as in the fine work of Jaubert and Spach on Oriental plants. It is a Fern of very delicate texture, like some slender specimens of *Gymnogramme leptophylla,* and it appears to me that Decaisne and Kunze have correctly referred it to *Onychium*; the specific name is derived from the black scales on the caudex, which is wanting in the specimen from which our drawing was made.

Fig. 1. Sterile portion of a frond. *f.* 2. Fertile portion of ditto, seen from beneath:—*magnified.*

Tab 2.



Fitch del et lith.

Pamplin imp

TAB. III.

ANEMIA (Coptophyllum) AURITA, *Sw.*

Caudice repente, frondibus sterilibus longe stipitatis deltoideo-oblongis subcoriaceis glabris lucidis pinnatis inferne bipinnatis, pinnulis subrotundis rhomboidisve petiolulatis flabellato-venosis crenulato-dentatis margine superiori sæpe auriculatis, fertili (radicali) solitaria bipinnata lobis glomeratis, stipitibus predunculoque hirsutis.

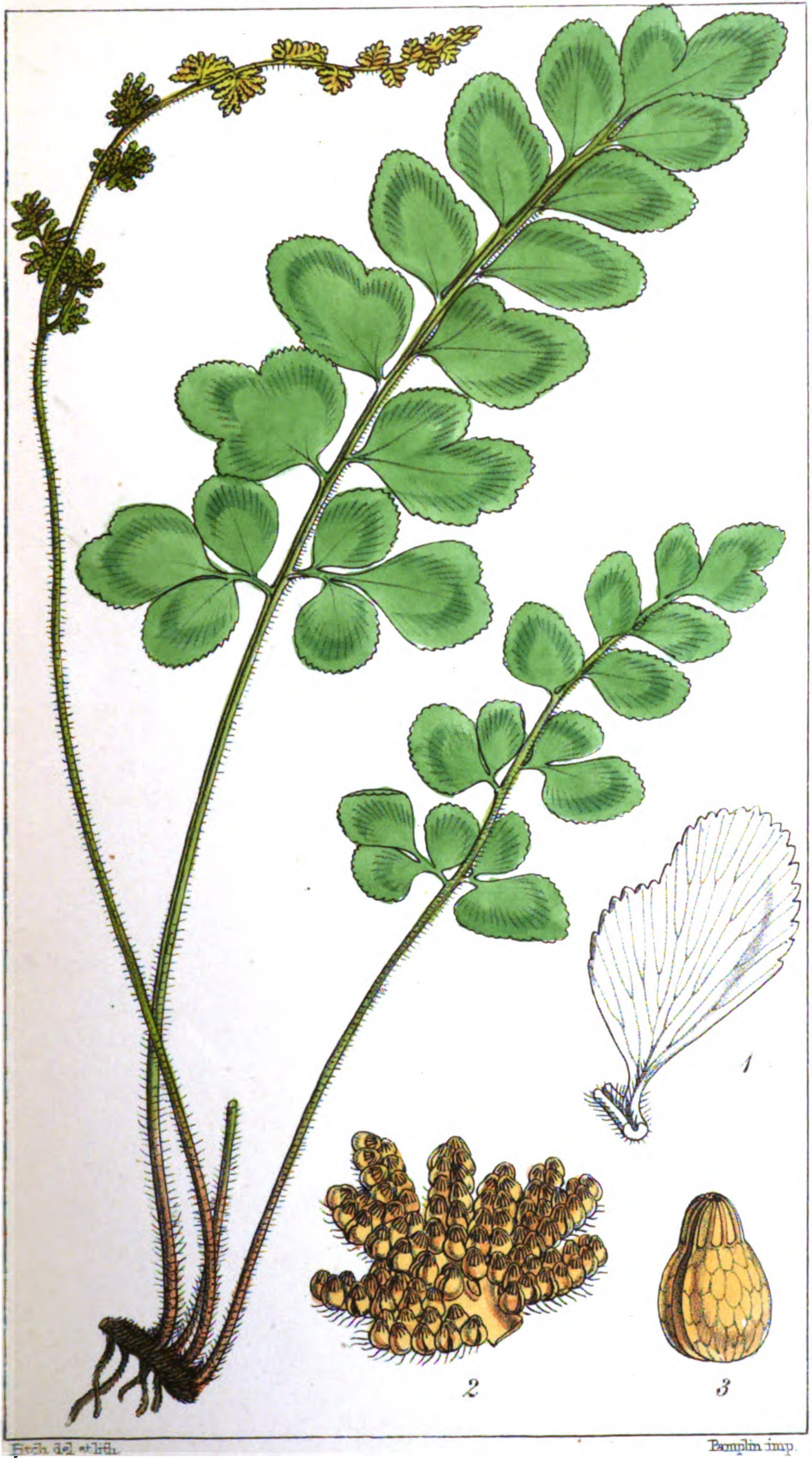
Anemia aurita, *Swartz, Syn. Fil. p.* 157. *Willd. Sp. Pl.* 5. *p.* 95. *Presl, Suppl. Tent. Pteridogr. p.* 80.

HAB. Jamaica, Swartz; Dolphin Peak, Westmorland, *Purdie, Wilson.*

Those species of *Anemia* which have the fertile fronds solitary and distinct from the sterile ones, have been separated by the late Mr. Gardner into a genus which he called *Coptophyllum,* a separation which we are glad to find is not adopted by Presl in his work above quoted. Mr. J. Smith is disposed to refer it to *Mohria.* The present seems to be one of the rarest of the group, and, for half a century from its discovery by Swartz, only to have been known to that author. Presl had only seen sterile fronds. Mr. Purdie detected the species in one spot in Jamaica, but could find no fructification. At length Mr. Wilson sent us, with many sterile plants, one fertile one, which we have here represented. It does not appear to have been met with any where but in Jamaica.

Fig. 1. Pinnule. *f.* 2. Cluster of fructifications. *f.* 3. Capsule:—*magnified.*

Tab 3.



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Pamplin imp.

TAB. IV.

CHEILANTHES OCHRACEA, *Hook.*

Cæspitosa, radice fibrosa, stipitibus brevibus squamis oblongis obtusis patentibus paleaceis una cum rachi pupureo-ebeneis, frondibus submembranaceis lato-lanceolatis subspithameis pilosulis subtus dense ochraceis furfuraceis pinnatis, pinnis plerisque oppositis lanceolatis obtusis infimis subdeltoideis omnibus fere ad rachin profunde pinnatifidis, segmentis ovalibus obtusis vix crenulatis ciliatis, involucris continuis angustis e margine reflexo formatis, marginibus membranaceis crenulatis non ciliatis.

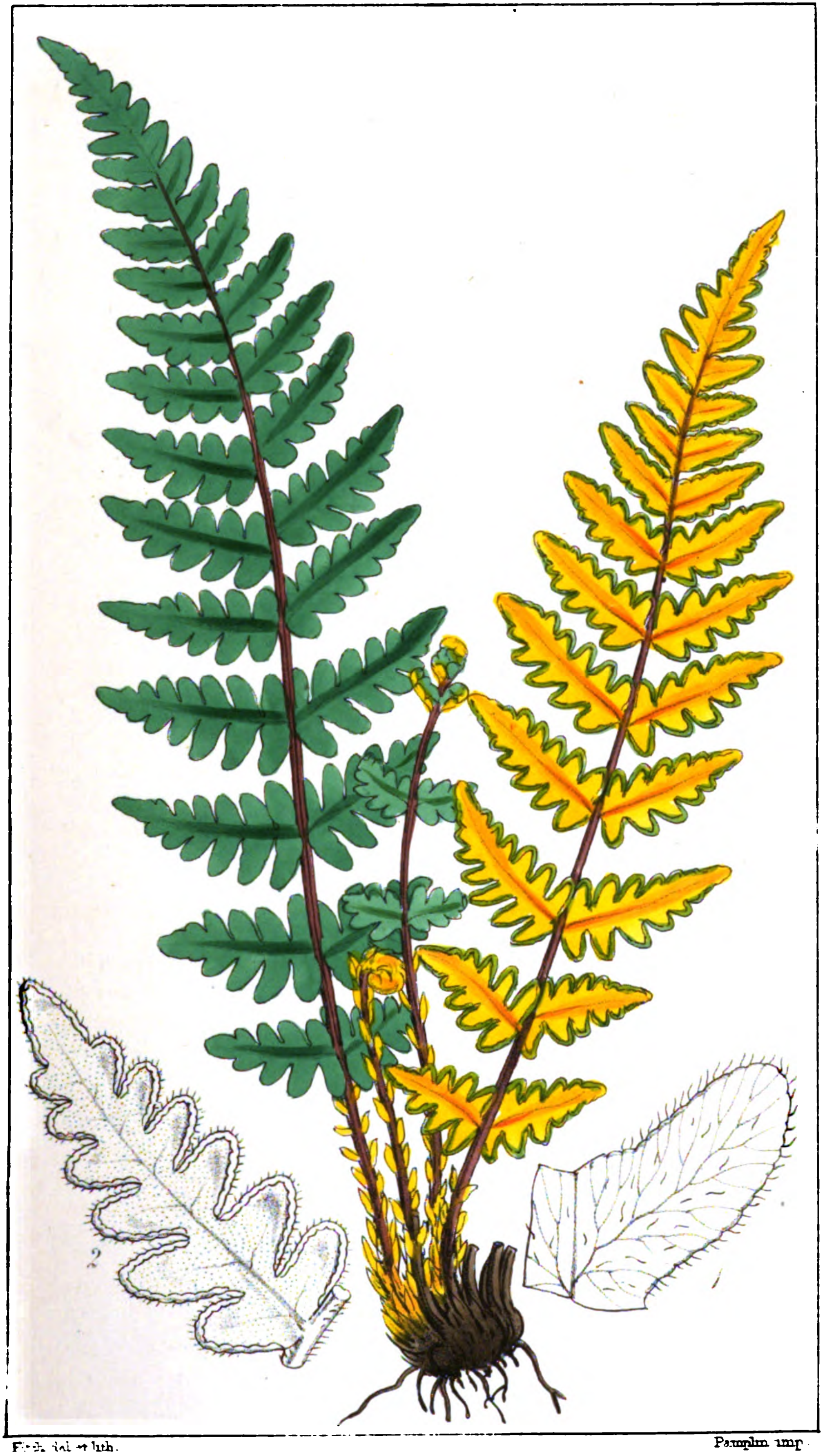
Cheilanthes ochracea, *Hook. Gen. et Spec. Fil.* 2. *p*. 144.
Allosorus ochraceus, *Hook. in Benth. Pl. Hartweg. p.* 55.

HAB. Moist shady places, at Morelia, Mexico, *Hartweg*, n. 418.

In this plant the involucre is so narrow, as may almost be overlooked, when the genus would be *Nothochlæna*; and when more evident, it is so continuous as to justify its being referred to *Allosorus*. I have placed it in *Cheilanthes* for the same reasons as have actuated me in placing *Ch. chrysophylla* (Tab. 1.) there, and on account of its affinity in other respects with that species. Here this pulverulent substance is very dense, of a singularly ochraceous colour, and the fronds are of a thinner texture than the last mentioned species; it differs further in the villous upper side of the fronds, in the ciliated margins, in the very short stipites, and is remarkable for the large sgreading blunt chaffy scales which clothe the latter.

Fig. 1. Lower segment of a pinnule, seen from above. *f.* 2. Fertile pinna, seen from beneath:—*magnified.*

Tab 4.



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Pamplin imp.

TAB. V.

GYMNOPTERIS QUERCIFOLIA, *Bernh.*

Frondibus ternatis, pinnis sterilibus membranaceis subciliatis lateralibus subcordato-lobatis sessilibus inæquilateralibus intermedia maxima petiolata oblongo-ovata sinuata lobata, fertili longe stipitata, stipite gracillimo, pinnis linearibus, stipitibus inferne præcipue squamosis, caudice repente.

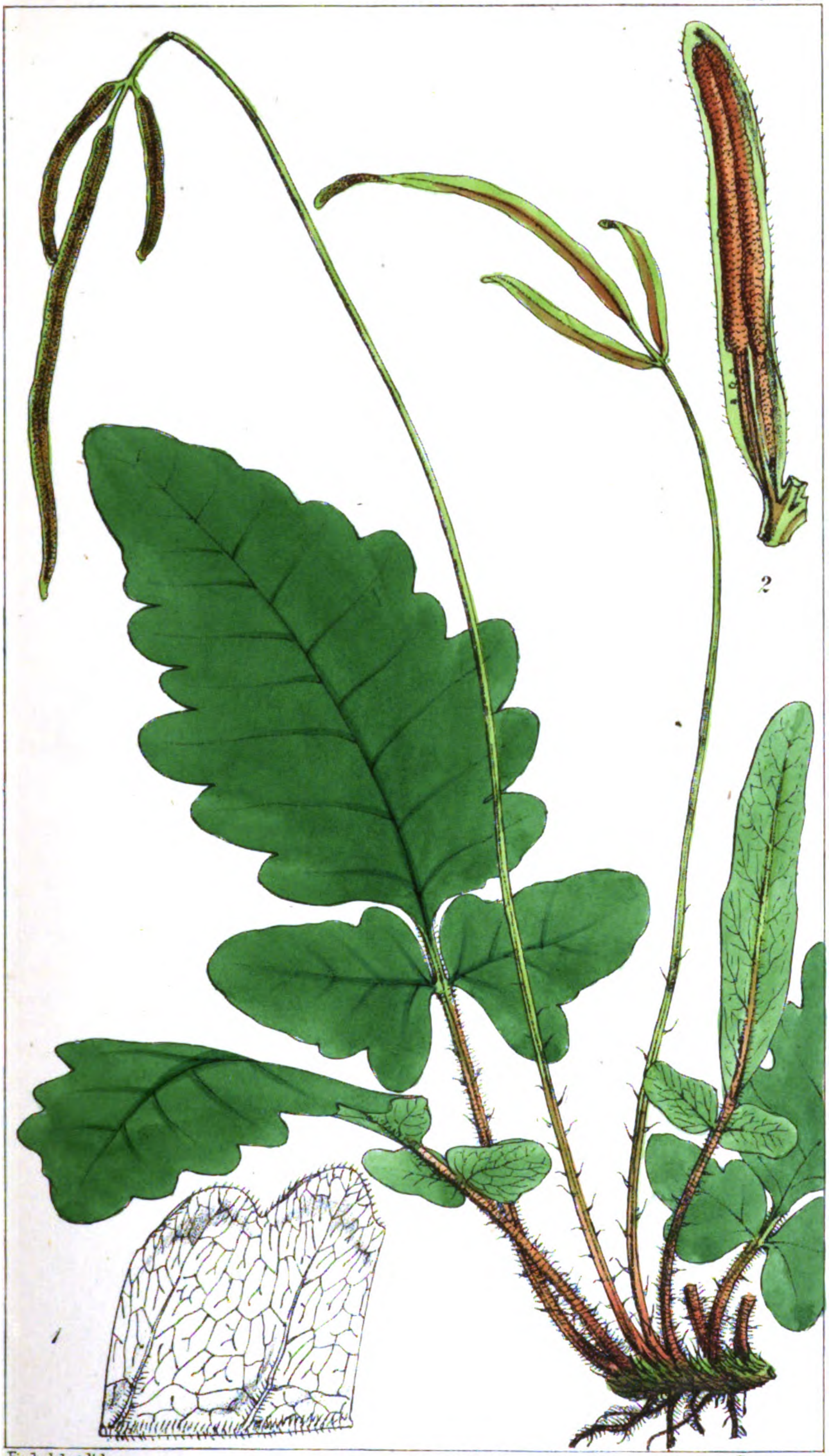
Gymnopteris quercifolia.—*Bernh.-Presl. Tent. Pterid. p.* 244.
Acrostichum quercifolium, *Retz. Obs. Bot.* 6. *p.* 39. *Sw. Syn. Fil. p.* 12. *Schkh. Fil.* 2. *t.* 3.
Osmunda trifida, *Jacq. Coll.* 3. *p.* 281. *t.* 20. *f.* 3.
Leptochilus quercifolius, *Fée, Mem. sur la Fam. des Fougéres. p.* 88.

HAB. Ceylon, (Vahl.) *Mrs. Genl. Walker, Gardner,* n. 1170. Madras Peninsula, *Dr. Wight, Herb. Propr. Cryptog.* n. 46. China and Cochinchina, *Moreau, Turanne,* and *Gaudichot,* (according to Presl).

A very peculiar looking and very distinct plant, represented long ago by Jacquin and by Schkuhr; but we cannot pay those authors the compliment to say they have figured it well or accurately. As to its genus, the most conservative Botanist will scarcely consider it can, with propriety, remain in *Acrostichum*. Bernhardi and Presl placed it in *Gymnopteris,* but M. Fée refers this, with several other genera, to *Leptochilus* of Kaulfuss, distinguished according to M. Fée, "sporangiis universalibus, in duobus sulcis angustis nascentibus," characters not very intelligible to us. Our present plant is remarkable for the length and slenderness of the fertile frond, and small size of the latter in comparison with the sterile one.

Fig. 1. Portion of a sterile frond. *f.* 2. Portion of a fertile frond:—*magnified.*

Tab 5.



Fitch del et lith

Pamplin imp.

TAB. VI.

ANEMIA (Anemidictyon) TWEEDIEANA, *Hook.*

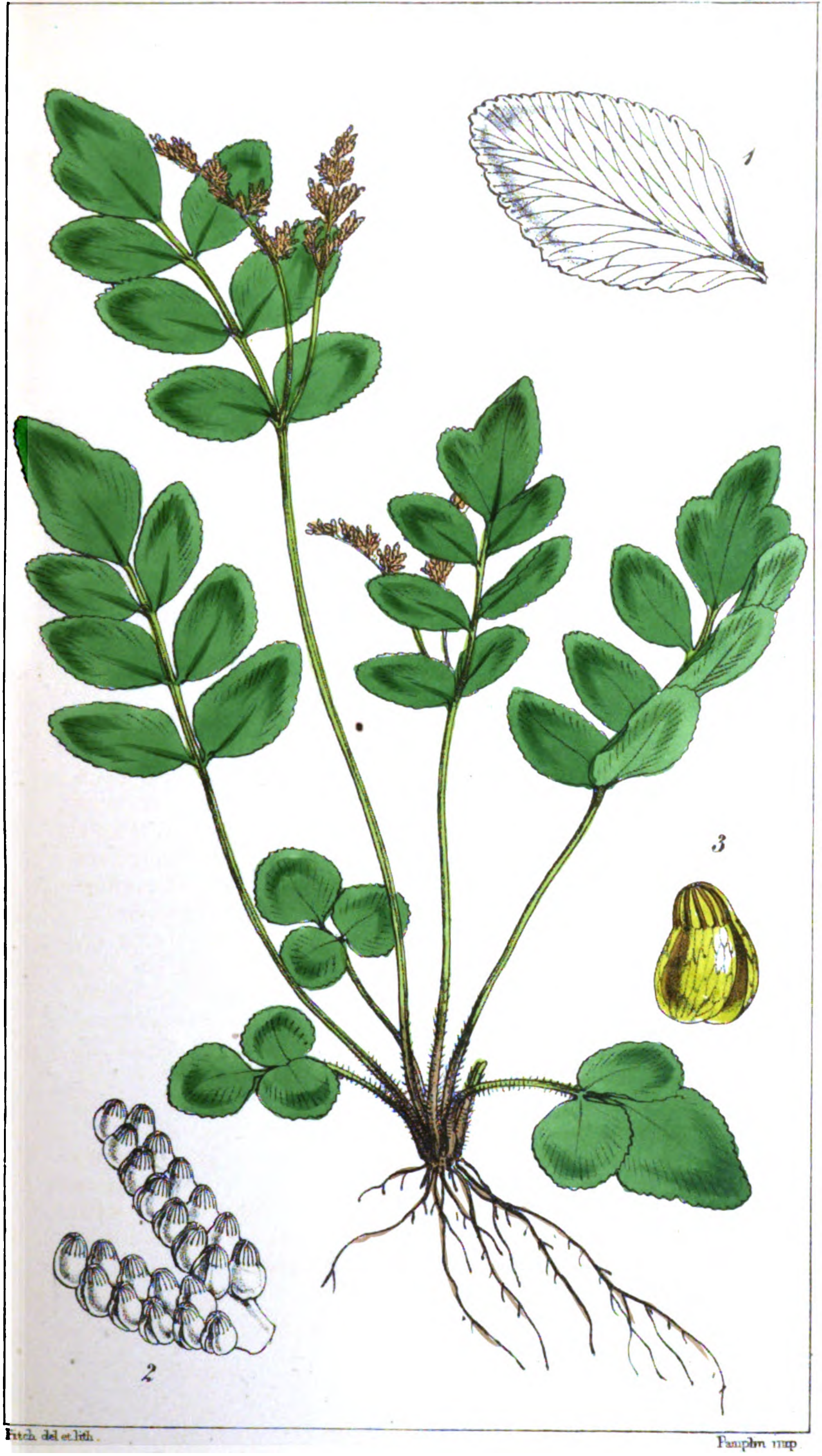
Humilis, frondibus glaberrimis pinnatis, pinnis 3-7 subrotundo-ovalibus obtusis dentatis reticulatim venosis tenuicostatis, terminali inæquilaterali, spicis compositis bipinnatis una cum pedunculis fronde brevioribus, stipitibus basi squamosis rachique decidue fusco-villosis.

HAB. Tucuman and Uraguay, S. Brazil, *Tweedie.*

This is one of the few Anemias distinguished by the reticulated (not forked) veins, of which Mr. John Smith has constituted the genus *Anemidictyon,* and in which he has been followed by Presl. We feel it safer, in the present state of the science, at least, to consider it rather a section of, than a distinct genus from, *Anemia*; for there is no natural character to distinguish it, nor any other mark beyond the mere anastomosing of the veins. As in *Anemia* proper, the species of this section are exceedingly variable. Presl enumerates 12, which he divides into groups, the one having the terminal lobe of the frond coadunate with the nearest lateral ones, and then lobed or cut, and the other into those which have the terminal lobe free. Among the former he places the *A. Phyllitidis* of J. Smith in Hook. Gen. Fil. which he considers identical with *A. fraxinifolia* of Raddi, Fil. Bras. *t.* 8. bis. Smith's plant, however, is represented with a free terminal lobe, and it becomes a question whether it be distinct from the *A. Phyllitidis* of Swartz, nor can we point out any character of our present species, other than the smaller size, the few very obtuse pinnæ to each frond, together with their freedom from all pubescence, combined with the short peduncule and spikes.

Fig. 1. Pinnule. *f.* 2. Lobes of the spikes. *f.* 3. Capsule:—*magnified.*

Tab 6.



Fitch del et lith.

Pamplin imp

TAB. VII.

GYMNOPTERIS TRILOBATA, *Sm.*

Frondibus sterilibus hastato-trilobis seu pinnatifidis basi in petiolum alatum decurrentibus, lobis oblongis obtuse acuminatis intermedio nunc sinuato subpinnatifidis, fertilibus profunde tri-quinquefidis segmentis linearibus acuminatis infra lobos non raro sterilibus, stipitibus paleis longis subulatis patentibus fuscis squamosis, radice cæspitosa.

Gymnopteris trilobata, *J. Smith, in Hook. Journ. of Bot.* 3. *p.* 403, (*name only*).

Leptochilus subquinquefidus, *Fée, Acrost. p.* 88. *t.* 49.

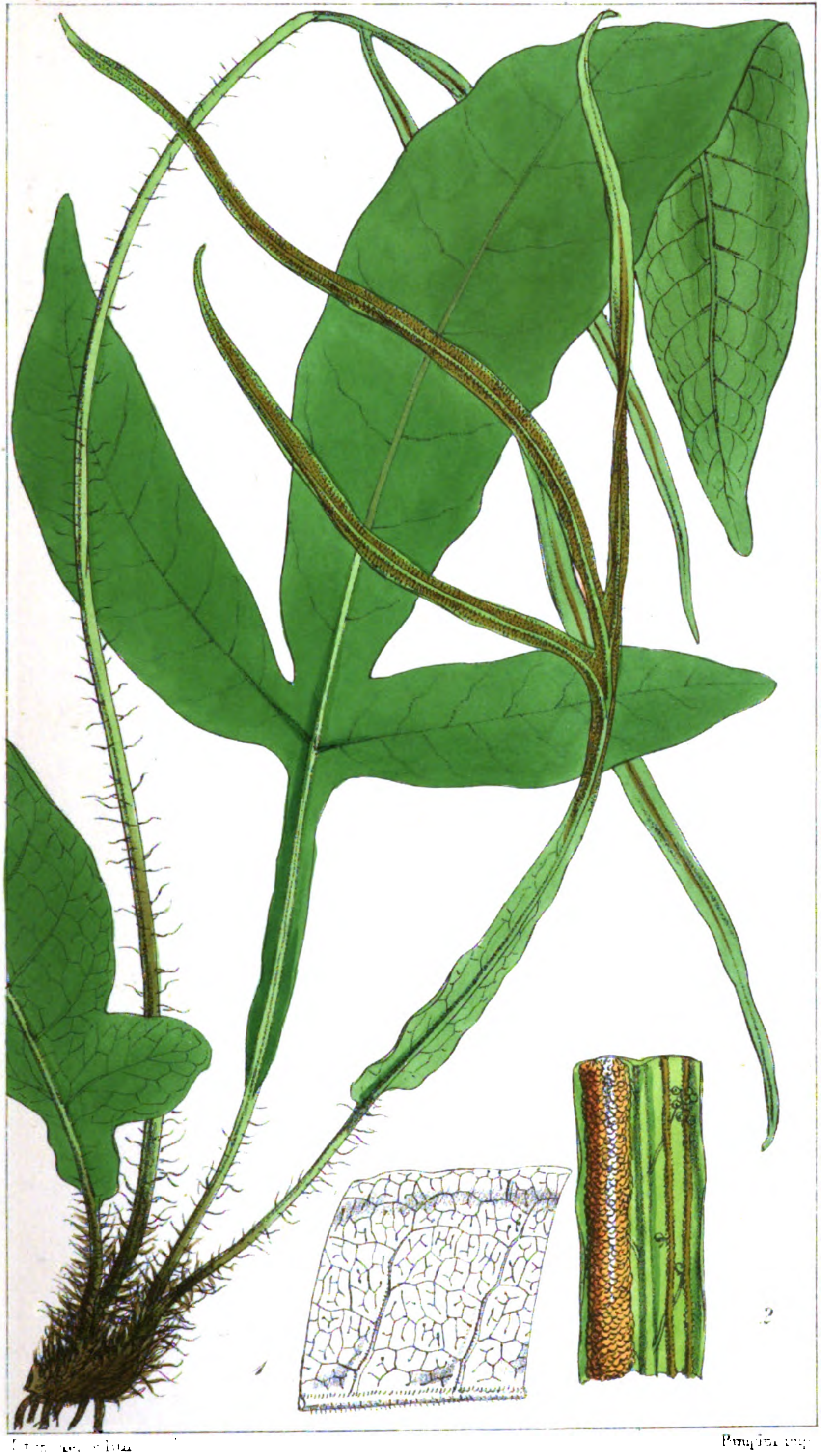
Gymnopteris subquinquefida. *Presl. Epim. Bot. p.* 151.

HAB. Luzon, *Cuming*, (*n.* 3), *Mr. Thos. Lobb, in Herb. Nostr.*

A plant evidently of the same genus with that figured at our Tab. 9; and for similar reasons, as in that case, M. Fée refers it to *Leptochilus.* Our plants have a short stout horizontal very scaly caudex, and the fronds, including the stipes, are a foot to a foot and a half long. Strangely enough M. Fée quotes J. Smith's *Gymnopteris trilobata* under his *Heteroneuron diversifolium* (Acrostichum *Bl.* and Cyrtogonium of *J. Sm.*) an extremely different species, and No. 32 of Mr. Cuming's collection. Our species varies with the leaves simply oblong and subhastate to pinnatifid with nine and ten segments, and with the lower segments auriculate. *Gymnopteris taccæfolia*, J. Sm. (Cuming, n. 357. Leptochilus, *Fée, Acrost. t.* 50), is closely allied to the more highly developed form of this, but it is larger, more membranaceous, decidedly pinnate, with the lower pinnæ bipartite, and has a creeping caudex. Smith's name is anterior to M. Fée's, but neither is appropriate to so very variable a species.

Fig. 1. Portion of the sterile frond. *f.* 2. Portion of the fertile frond:—*magnified.*

Tab 7.



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TAB. VIII.

PHYLLOGLOSSUM DRUMMONDI, *Kze.*

Gen. Char. Spica pedunculata, brevis, oblongo-ovata, capsulifera, bracteata. *Bracteæ* plurimæ, spiraliter dispositæ, subimbricatæ, cordato-rotundatæ, integerrimæ, crassiusculæ, subcarnosæ, mucronatim acuminatæ, basi producta libera. *Capsulæ* solitariæ axillares (in bractearum axillis) reniformes, erectæ, bivalves, verticaliter usque ad basin dehiscentes. *Sporæ* numerosæ subtetrahedræ, pellucidæ.—*Herbaceum, pusillum, australasicum.* Caudex *brevissimus, subnullus.* Radix *e fibris* 1-3 *simplicibus, crassiusculis, albis tuberosa*; tuberibus *oblongis basi attenuatis.* Folia *radicalia. vel subradicalia, linearia, semiteretia, acuta, scapo, seu pedunculo breviora.* Scapus *teres, crassus, solitarius, spiciferus.*

Phylloglossum Drummondi, *Kze.* in *Botanische Zeitung*, 1843. *p.* 724. *cum Ic. xylogr.* (1843.)

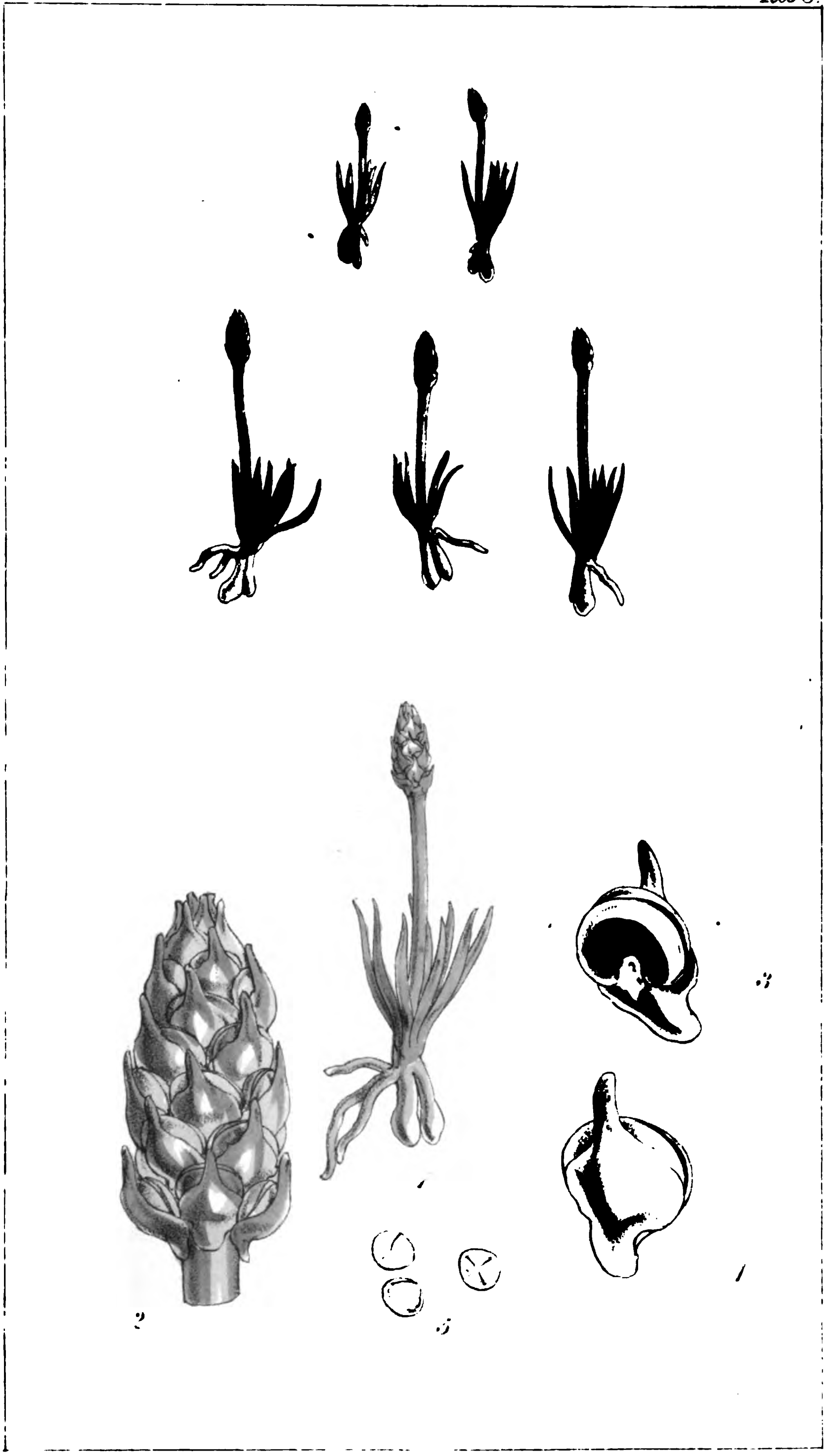
Lycopodium Sanguisorba, Spring *Monogr. des Lycop. P.* II. *p.* 36, (1849.)

HAB. Australia, Swan River, *Drummond*, n. 993. George Town, Van Dieman's Land, *R. Gunn, Esq.* n. 1560. New Zealand, peaty soil near the Wytangi River, *Dr. Hooker, Rev. W. Colenso* (n. 325), *Dr. Sinclair.*

In 1843 a woodcut and description of this very remarkable plant were published by Professor Kunze, in Mohl's Botanische Zeitung for 1843, as a new genus and even a new natural group of the Linnæan Filices. It is a matter of surprise then, that these should appear to be unknown to Dr. Spring, who presented his "*Monographie des Lycopdiacees*" to the Académie Royale de Belgique in 1849, and there described it as a new *Lycopodium*, "*L. Sanguisorba*," remarking, however, that "d'après son *facies* on croirait avoir affaire à une espèce du genre *Isoetes*." Professor Kunze's view we consider more correct; "Planta memorabilis, habitu fere *Plantaginem pusillam* referens, seu inter Filices *Ophioglosso Bergiano*, Schlect. (Hooker, Ic. Pl. *p.* 263.) non absimilis." It is of the size, and with the general habit, of that plant, but the spike is that of *Lycopodium.* It may well form a distinct order between *Ophioglossaceæ* and *Lycopodiaceæ*:—and we have here had little more to do than improve Kunze's accurate characters, by means of our more copious specimens.

Fig. 1. Entire plant. *f.* 2. Spike of fructification. *f.* 3. Inside view of a bractea with a capsule. *f.* 4. Outside view of ditto. *f.* 5. Spores:—all more or less *magnified.*

Tab 8.



Fitch del et lith.

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TAB. IX.

MARSILEA MACROPUS.

Foliis peltatis quaternis petiolisque elongatis sericeo-tomentosis, foliolis lato-cuneatis apice erosis, pedunculis subradicalibus elongatis biuncialibus, capsulis oblique ovatis dense sericeo-strigosis transversim lineatis hinc basi gibbosis, caudice repente ramoso.

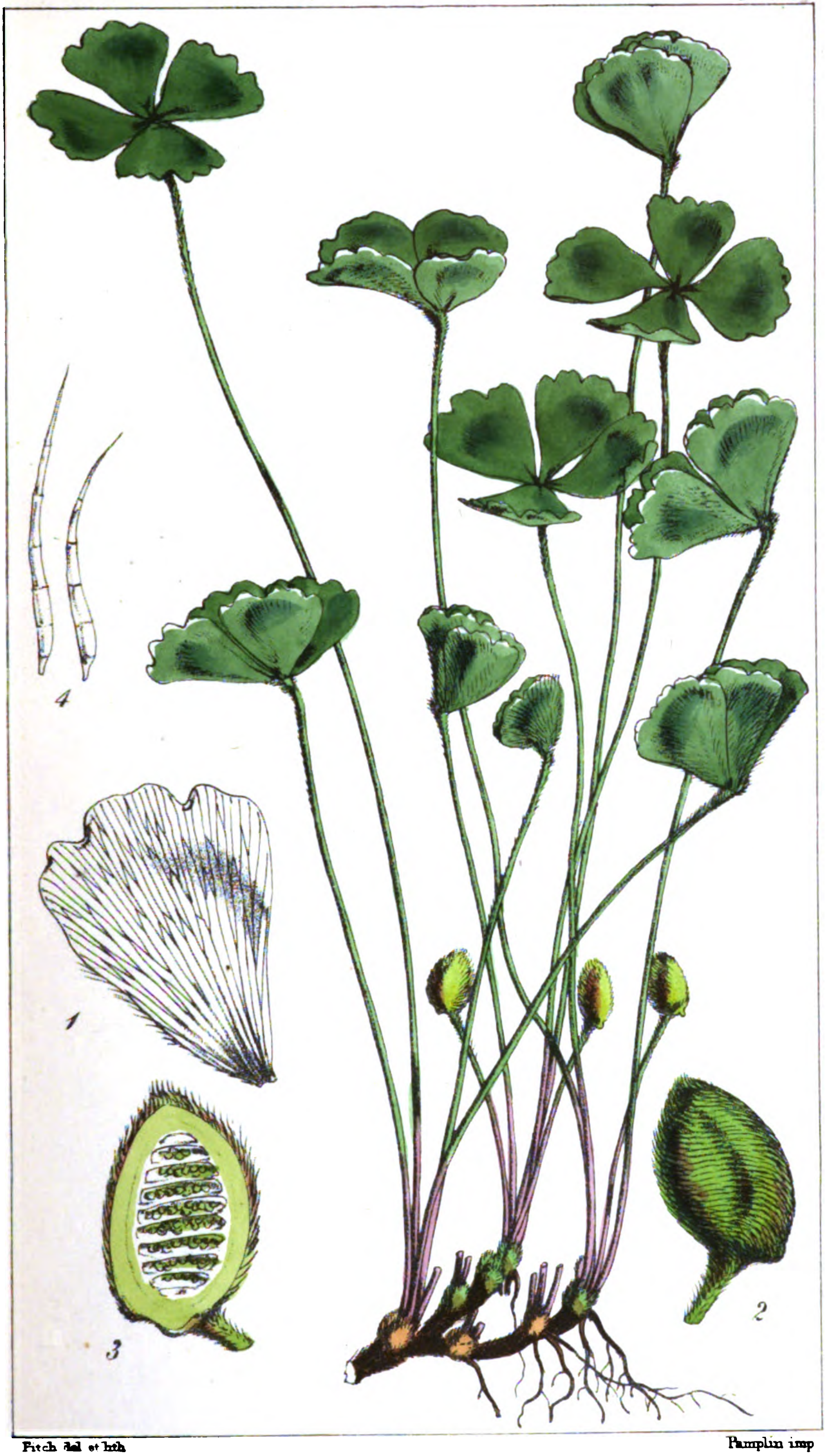
HAB. Australia, low inundated grounds; Lachlan river and Liverpool plains, *All. Cunningham.* Severn river, S. W. Australia, *Drummond.*

Our finest specimens are sent from Swan river, among the later collections of Mr. Drummond. It is a species of *Marsilea,* as far as I can find, hitherto quite undescribed; remarkable for the very sericeously tomentose leaves, (especially the underside), and petiole and capsules, and for the great length of the peduncles of the latter.

The caudex creeps for some length, and is scarcely so thick as a crow's-quill, rooting, branched, and knotty; the knots are densely woolly with ferruginous hair, and seem to be the rudiments of a new cluster of fronds. *Fronds* or *leaves* from the apex of a woolly knot or branch, two to four from one point. *Petioles* from four inches to a span long, erect, flexuose slender, silky, bearing at the point four spreading broadly cuneate leaflets, finely and radiately veined, the veins here and there anastomosing, villous with dense silky hairs, especially beneath: the *hairs* often deciduous above, and occasionally beneath, subulate, articulated, tawny. From the very base, among the cluster of petioles, arise one or two erect peduncles about two inches long, in other respects resembling the petioles; these are terminated each by an obliquely erect, ovate, compressed *capsule,* transversely striated, with a gibbosity on one side at the base, densely clothed with imbricating, subulate, jointed hairs.

Fig. 1. Leaflet. *f.* 2. Capsule. *f.* 3. The same cut through transversely. *f.* 4. Hairs from the Capsule :—all more or less *magnified.*

Tab 9.



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Pamplin imp

TAB. X.

LEPTOPTERIS SUPERBA.

Fronde brevi-petiolata lanceolata inferne longe attenuata bipinnata, pinnis primariis oblongo-linearibus acuminatis patentibus inferioribus deflexis, pinnulis pinnatifidis laciniis lanceolatis obtusiusculis costatis integris vel furcatis, petiolo rachique primario inferne prœcipue robusto rachibusque partialibus omnibus fusco-setoso-tomentosis.

Todea superba, *Colenso, Ferns of N. Zeal.* p. 28. *Herb. N. Zeal. n.* 2306, 793, 113, 1672, *and* 281.

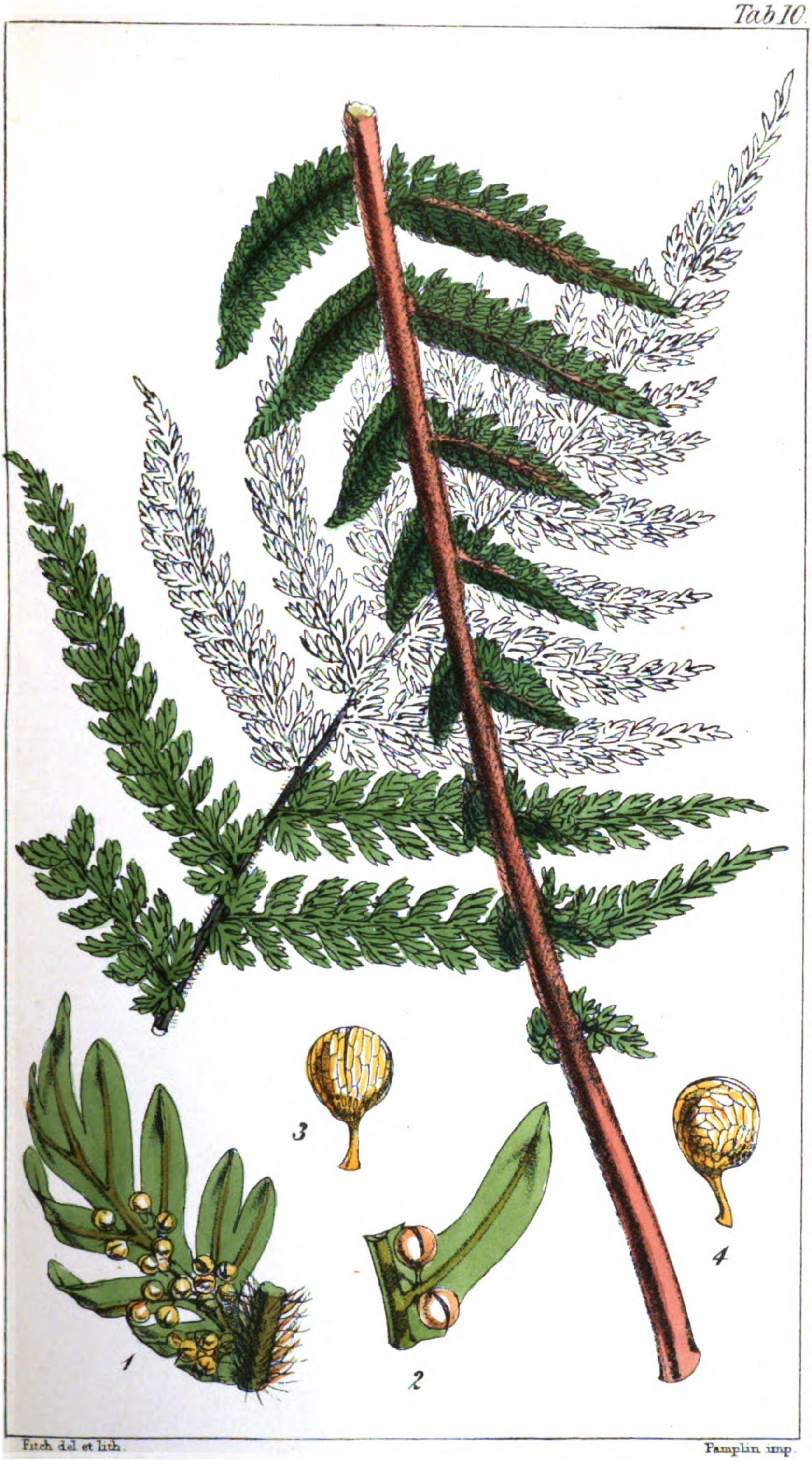
Trichomanes, *Banks, in Herb. Jacq. mem. Herb. Imp. Palat. Vien.* (*Presl.*)

HAB. Northern Island, N. Zealand. *Forster in Herb. Hook.*; Dells, in shaded forests; on the mountain range near Waikare lake, in decomposed sandstone soil, Decr. 1841; Tongarou mountain, 1838. *Rev. W. Colenso. Dr. Sinclair*, Upper Hill, Port Nicholson, *Dr. Lyall.*

I possess a specimen of this plant, gathered by Forster in N. Zealand, during Captain Cook's voyage, and in all probability it is the same plant named "*Trichomanes*" in Jacq. Herb. and not the *L. pellucida* to which Presl refers it, communicated, by Sir Joseph Banks, to the Austrian Botanist: to Forster therefore is due its discovery. It seems to have remained unknown to any other Botanist till the Rev. Mr. Colenso detected it in 1838 and 1841 in the above localities. Its affinities are with the N. Zealand *Todea pellucida*, (see Tab. 8. of Icones Plantarum), and the Australian *Todea Fraseri*, Hook. et Grev. Ic. Fil. t. 101. The three we think are well separated from *Todea*, and Presl has determined the character of his Genus *Leptopteris* in his Suppl. Tent. Pteridogr. p. 70. As a species, it is abundantly distinguished by the outline of the frond tapering at the base, the stout stipes and main rachis, and the copious bristly tomentum of the underside of the main and partial rachis. "Some of the fronds," Mr. Colenso says, "are upwards of four feet in length. The old fronds spread outwards, while the younger ones, generally three in number, circinnate and of a lighter green, rise in the most graceful suberect manner from the centre."

Fig. 1. Fertile pinnule as seen from the underside. *f.* 2. Small portion of the same. *f.* 3. 4. Capsules:—*magnified,*

Tab 10.



Fitch del et lith.
Pamplin imp.

TAB. XI.

ASPLENIUM NOVÆ-CALEDONIÆ.

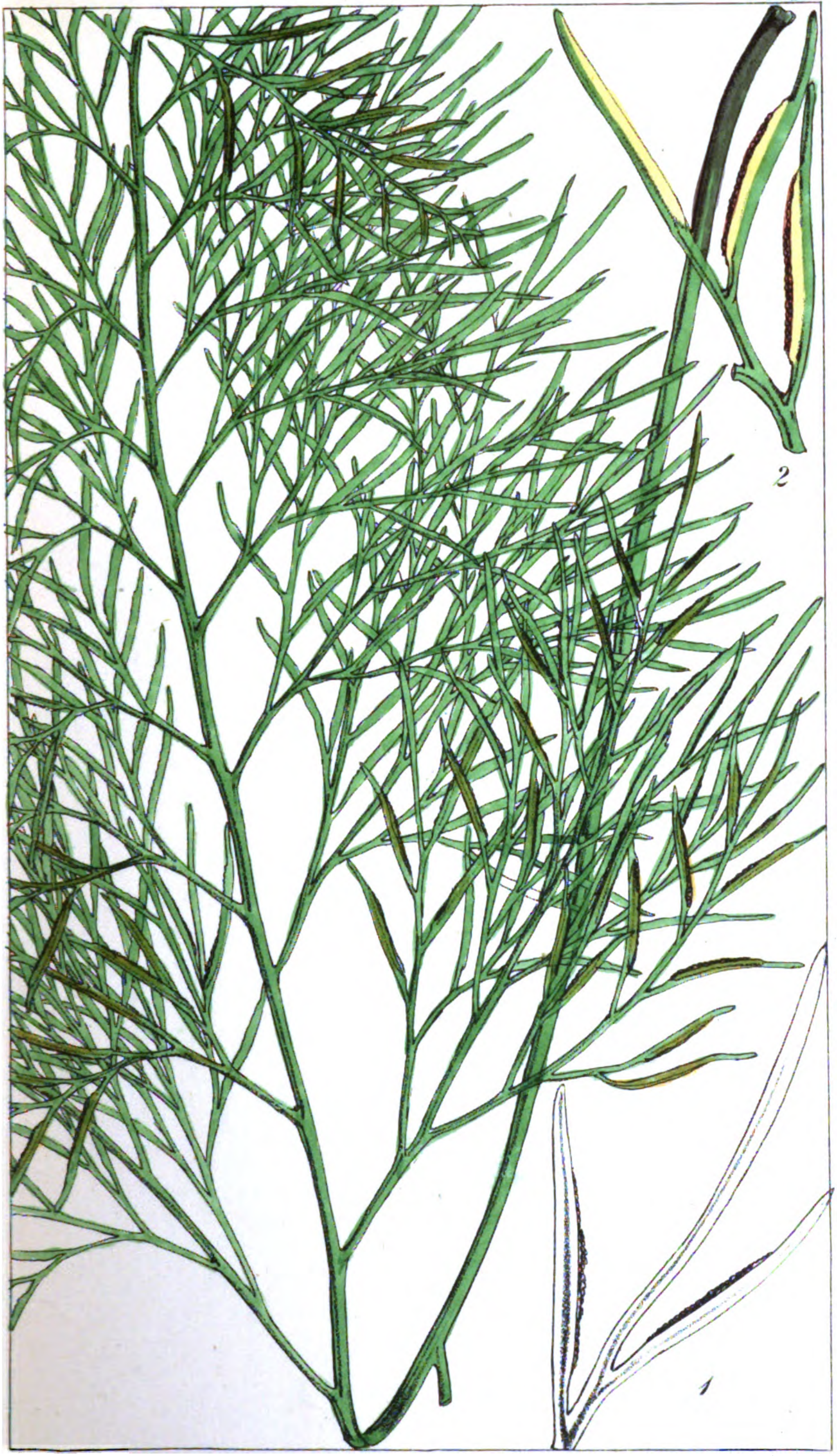
Fronde rachiformi deltoidea glaberrima 3-4-pinnata, rachibus pinnulisque linearibus subcoriaceis uninerviis, soris angusto-linearibus elongatis solitariis (qualibet pinnula) ad marginem dehiscentibus, stipite elongato inferne terete.

HAB. Crevices of rocks in very dry exposed situations, New Caledonia, *C. Moore, Esq.*

A very distinct species of *Asplenium*, which will assuredly rank in habit and structure with the *Darea* group, which is usually acknowledged to be inseparable, generically, from true *Asplenium*.

The present species is remarkable in the length and narrowness of the segments of the frond. Of the ultimate segments nearly the whole of one side of the costa is often occupied by the sorus: so that the species cannot well be confounded with any other of the genus.

Fig. 1. 2. Fertile portions of the frond:—*magnified.*



Fitch del et lith.
Pamplin imp

TAB. XII.

CHEILANTHES NITIDULA.

Caudice brevi repente, stipitibus 2-5-uncialibus cæspitosis rachibusque (supra puberulis) ebeneis squamis subulatis fuscis paleaceis deciduis hispidis, frondibus 3—4 v. 5-uncialibus subdeltoideo-oblongis acuminatis (sterili latioribus) coriaceo-membranaceis pallide virentibus glabris pinnato-pinnatifidis inferne subbipinnatis, pinnis approximatis sæpissime oppositis ovato-lanceolatis subdimidiatis (dimidio inferiore latiore) profunde pinnatifidis usque ad rachin, infimis iterum subpinnatis, pinnis secundariis pinnatifidis, lobis oblongis integris vel sinuatis sensim acutis, involucris subintramarginalibus continuis raro interruptis latis planis membranaceis fuscis appressis sæpissime lobatis crenatisque transversim rugosis.

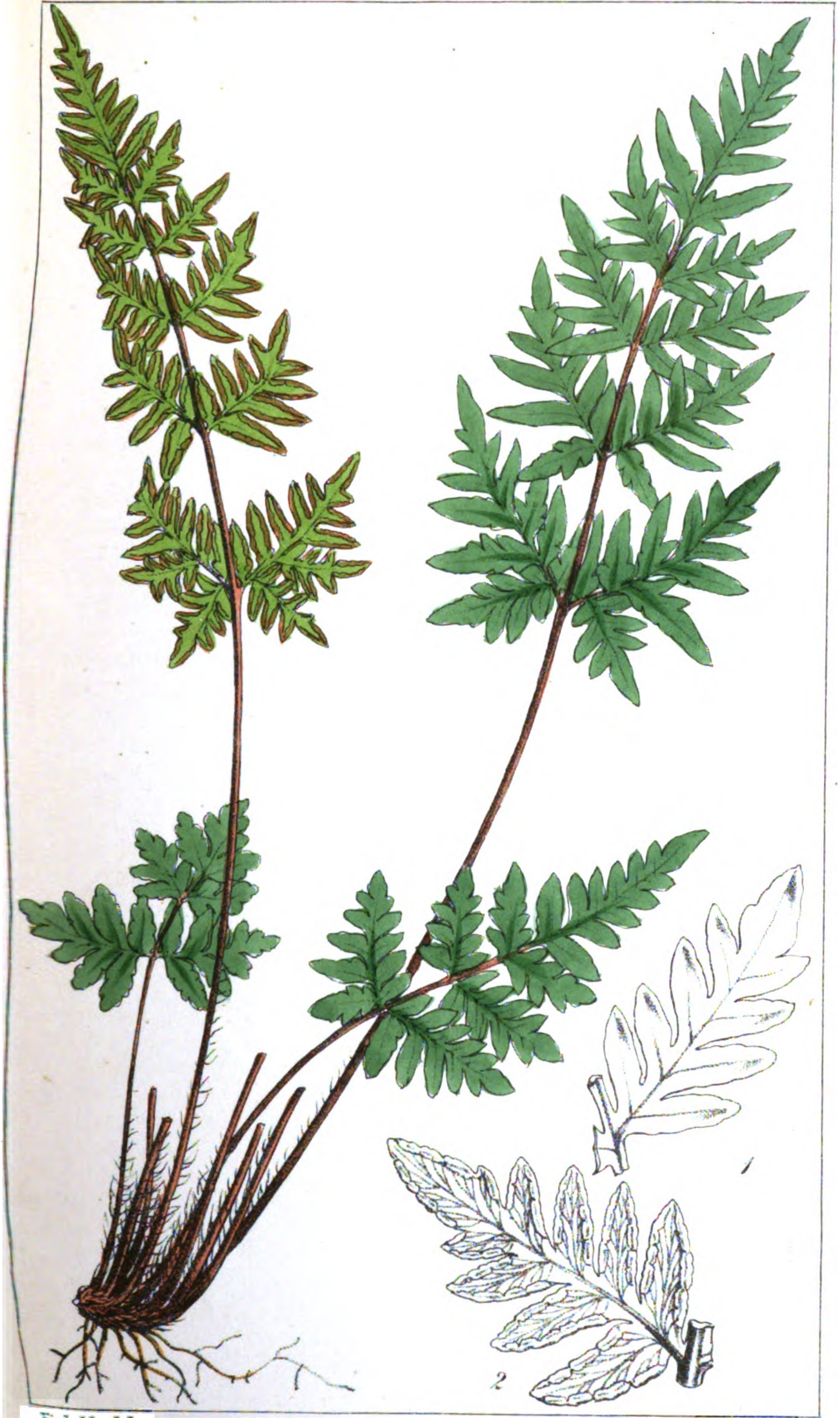
Cheilanthes nitidula, *Hook. Gen. et Sp. Fil.* 2. *p.* 112.
Pteris nitidula, *Wall. Cat. n.* 89.
Allosorus nitidulus, *Presl.*

HAB. Northern India. Kamaoun, *Dr. Wallich.* Rocks, Simla, *Dr. T. Thomson.* Pundkester, N. India, *Mr. Edgeworth.*

One of Dr. Wallich's many Indian discoveries, made either by himself in Northern India, or through the medium of the many excellent collectors he was privileged to employ; and whom he so successfully employed, especially in the search after Ferns, that very little of novelty has been left for succeeding Botanists. In the arrangement of the Genus *Cheilanthes* in the Genera and Species Filicum, we have placed this in the "*Pteridoideæ*" group, having, as we there observed, nearly as strong a claim to be placed in *Pteris* or *Allosorus* as in *Cheilanthes*. Presl considers it an associate of *Cryptogramma*, Br., for he refers it to the section of his *Allosorus*, which includes that genus; erroneously we think. As a species it is very distinct.

Fig. 1. Upper side of a sterile pinna. *f.* 2. Under side of a fertile pinna; *magnified.*

Tab.12



Fitch del et lith.

Pamplin imp

TAB. XIII.

ASPLENIUM (Athyrium?) GRAMMITOIDES, *Hook.*

Humile, fronde herbacea firma parce setulosa oblongo-lanceolata longe acuminata pinnata superne pinnatifida, pinnis lanceolatis subfalcatis obtusis basi superiore auriculatis omnibus lobato-vel dentato-pinnatifidis, stipite brevi paleaceo, paleis setaceis patentibus crispatis, soris satis magnis, involucris oblongis planiusculis ciliatis, inferioribus sæpe diplazoideis.

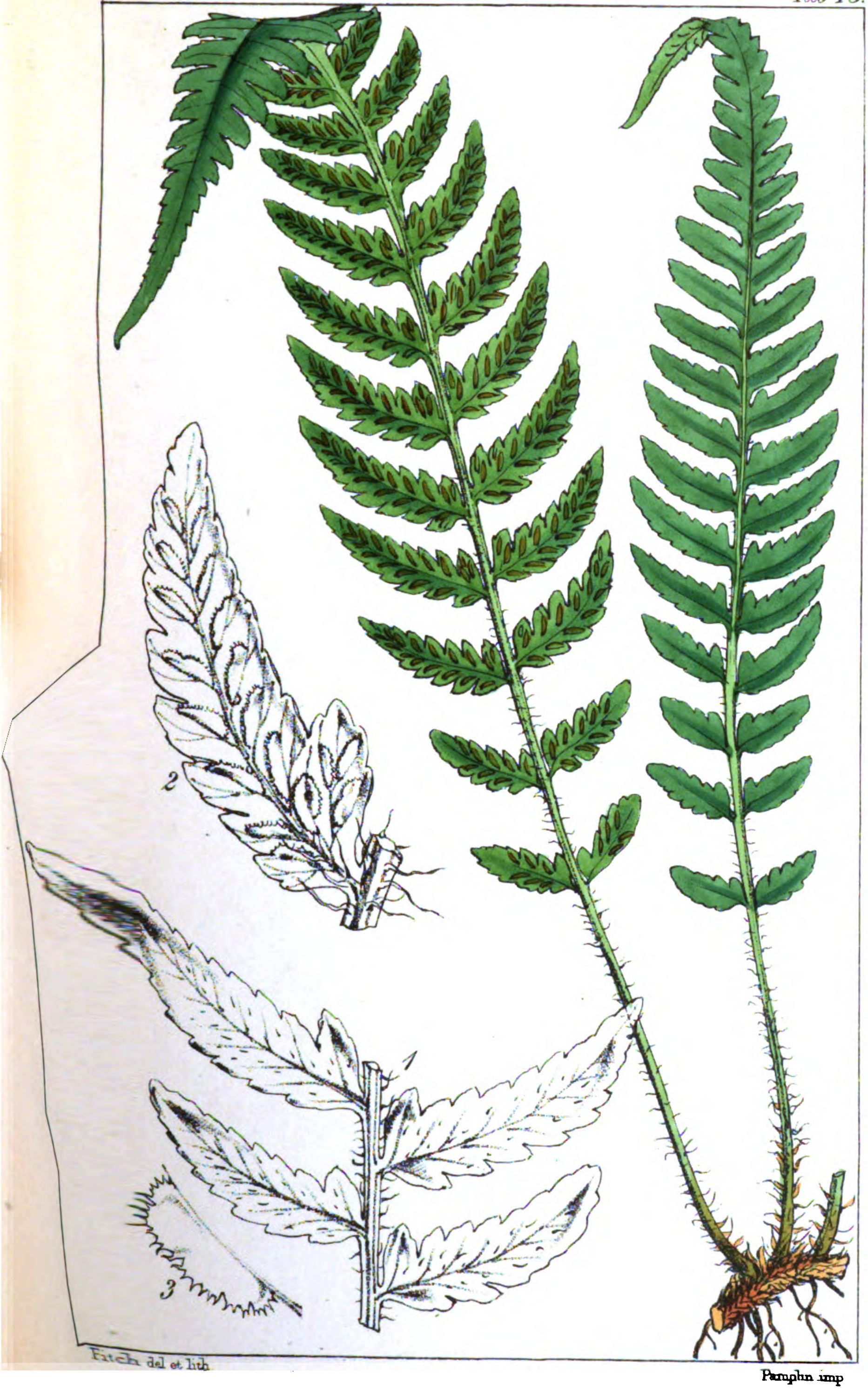
Diplazium grammitoides, *Presl, Epimel. Bot. p.* 84.

HAB. Luzon, *Cuming,* n. 56. Java, *Thos. Lobb,* n. 258.

Mr. J. Smith in his Enumeratio Filicum, after the names of ten species of *Diplazium,* observes that "Mr. Cuming's n. 56 is probably one of them in a young state." Our plants, however, from that collector, have every appearance of being perfect, and this view is confirmed by copious specimens, identical with these, having been found in Java, by Mr. Thomas Lobb, and which are here figured. The late Dr. Presl entertained the same opinion, and described our plant in the work above quoted, as a new species, *Diplazium grammitoides.* The specific name I willingly adopt, though I doubt of the propriety of referring it to the Genus *Diplazium,* unless *Diplazium* were to receive every *Asplenium* which had a double involucre ever so sparingly mingled with the single ones. Here a displaziod involucre is only found towards the base of the pinna, and where a lobe or pinnule may be considered to be combined with the pinna, each half opening towards its own rachis or costa. With more propriety it might be placed in *Athyrium,* as Fée has referred the *Diplazium brevisorum* of J. Smith, the species immediately after which Smith notices this, and from its affinity with *Athyrium Hohenackerianum* of Kunze (Schk. Fil. Suppl. tab. 126);—but which, nevertheless, M. Fée places in *Asplenium.* So different are the views of Botanists in regard to the Genera of Ferns: Botanists, too, alike anxious to fix them upon a firm and solid basis.

Fig. 1. Upper portion of pinnæ. *f.* 2. Upper side of a fertile pinna. *f.* 3. Involucre:—*magnified.*

Tab 13.



Fitch del et lith

Pamplin imp

TAB. XIV.

Asplenium attenuatum, *Br.*

Frondibus lineari-oblongis longe tenuiterque attenuatis (apice sæpe proliferis) lobato-pinnatifidis basi subpinnatis apice integerrimis, pinnis lobisque subrotundatis omnibus serrato-dentatis, stipitibus paleaceo-hirsutis, caudice repente.

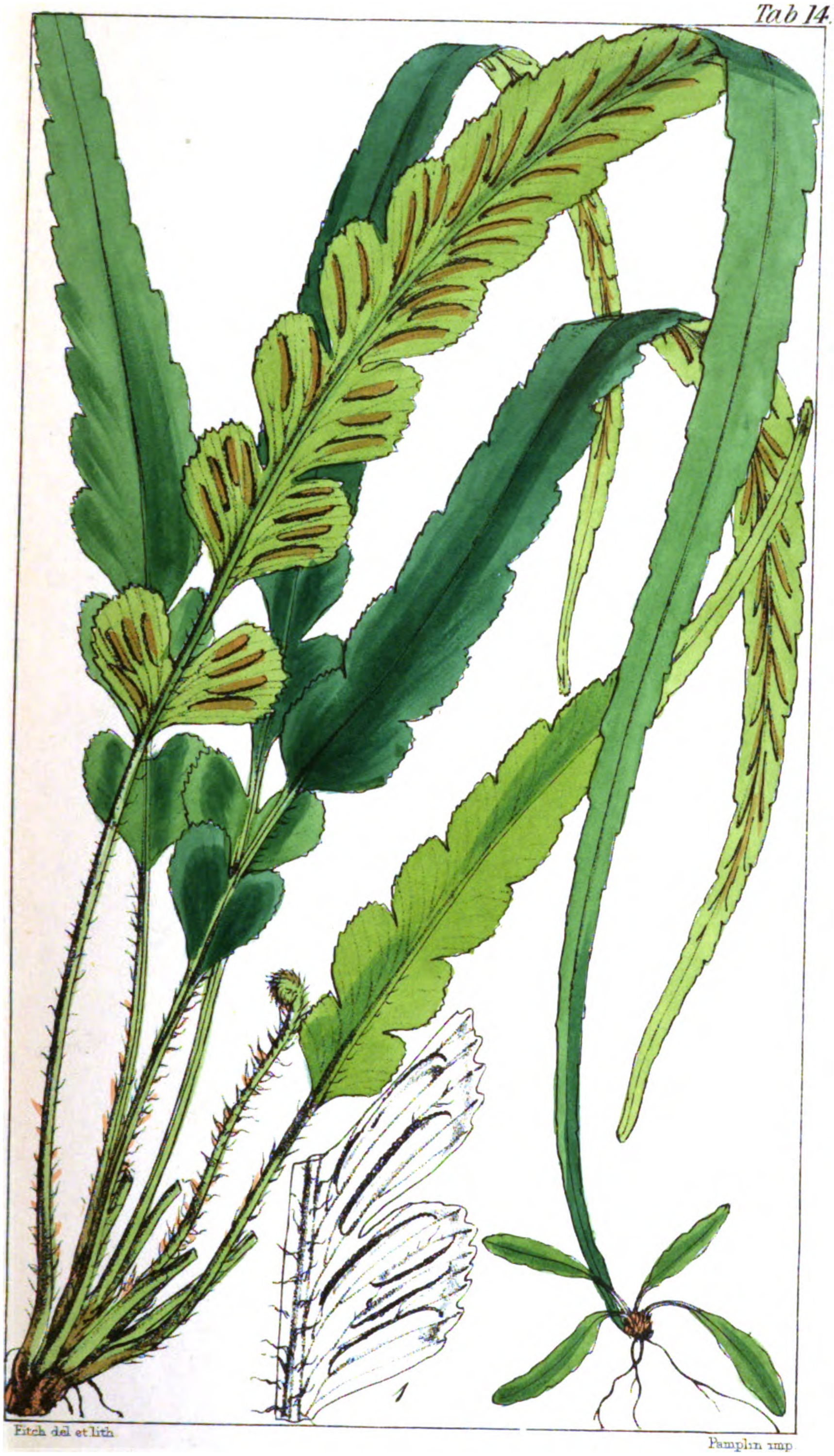
Asplenium attenuatum. *Br. Prodr. Fl. Nov. Holl. p.* 50. *Hook. et Grev. Ic. Fil. Tab.* 209.

Hab. New Holland; Port Jackson, *Brown, Fraser;* dry shady woods, Brisbane river, *Allan Cunningham.*

This species, though not new, seems of rare occurrence, and in the specimens before us, from Brisbane river, gathered by the late Allan Cunningham, shows itself under a new form, that of a proliferous plant, throwing out roots and young fronds from the long attenuated apices whenever they touch the soil. The scales of the stipes, though, when seen with the naked eye, looking like chaffy hair, are, as represented accurately in Icones Filicum, above quoted, subulate, dark brown, membranaceous, coarsely reticulated, with four divaricated subulate segments at the base. As a species, this is very distinct from any other we are acquainted with. The sori occupy nearly the centre of the lobes or pinnæ, between the costa and the margin.

Fig. 1. Portion of a fructified frond, seen from beneath:—*magnified.*

Tab 14.



Fitch del et lith

Pamplin imp

TAB. XV.

PTERIS (Pellea) GERANIIFOLIA, *Raddi.*

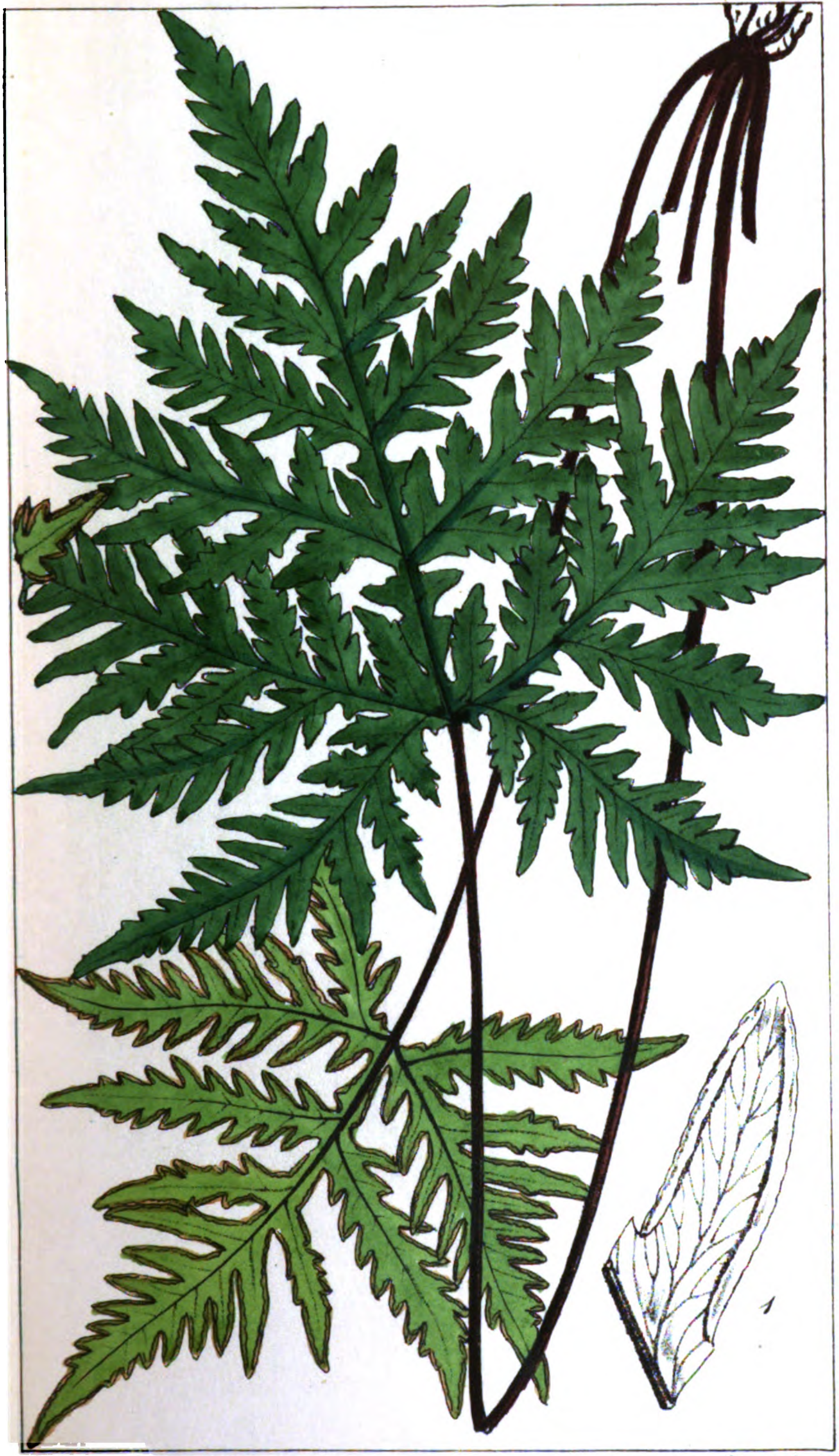
Cæspitosa glabra, frondibus cordiformibus profundissime quinquelobo-palmatis subcoriaceis opacis, laciniis lanceolatis pinnatifidis bipinnatifidisve, lobo primario intermedio basi cuneato, lobis ultimis ovato-lanceolatis integerrimis acutiusculis, sinubus acutis, stipite elongato rachibusque primariis nigro-ebeneis.

Pteris geraniifolia, *Raddi, Syn. Fil. Brasil, n.* 110. *Fil. Brasil, p.* 46. *Gardn. Fil. Brasil, exsicc. n.* 39.
Pteris Pohliana, *Presl, Tent. Pterid. p.* 145.
Pteris pedata, *Kunze, in Linnæa,* 10. *p.* 522. *not Linn.*
Pteris pedatoides, *Desv.*
Pteris Mysurensis, *Heyne, in Wall. Cat. n.* 87.
Pellea pedata and geraniifolia, *Feé. Gen. Fil. p.* 130.

HAB. Brazil; Rio, *Raddi, Gardner, Armstrong, Mrs. Graham;* S. Brazil, *Sellow.* Santa Martha, Columbia, *Purdie.* Cape of Good Hope, *Menzies. Drége.* Madagascar and Mauritius, *Bojer.* Neelgherry, E. Indies, (*Wallich*). Volcano, Owhyhee, *Macrae.* Gallapagos, *Douglas.*

Probably there are few Fern Herbaria, containing various suites of specimens, in which the present species of *Pteris* (with free or only forked veins), will not be found mixed and confounded with the original *Pteris pedata* of Linnæus, a species having anastomosing veins, and therefere a *Litobrochia,* Presl. (Doryopteris, *J. Sm., Fèe.*); so closely are they allied in other respects: and in the old and opaque specimens, of either kind, the venation is very difficult to be seen. The present is, indeed, usually a more compound species; but is often less so than is here represented. Desvaux was probably the first to distinguish the two, but Raddi's name is surely to be preferred to his. The above localities may be entirely depended on, as they are derived from specimens existing in my Herbarium.

Fig. 1. Fertile segments:—*magnified.*



Fitch del et lith.

Pamplin imp

TAB. XVI.

GYMNOGRAMME MICROPHYLLA, *Hook.*

Pusilla densissime cæspitosa glaberima, caudice gracili subrepente, frondibus triangulari-ovatis membranaceis subdiaphanis pinnatis, pinnis profunde bi-tripinnatifidis, laciniis ovali-lanceolatis acutiusculis uninerviis monosoratis, stipitibus gracillimis fusco-purpureis nitidis omnino nudis, soris oblongis terminalibus, (nervo ante apicem evanescente).

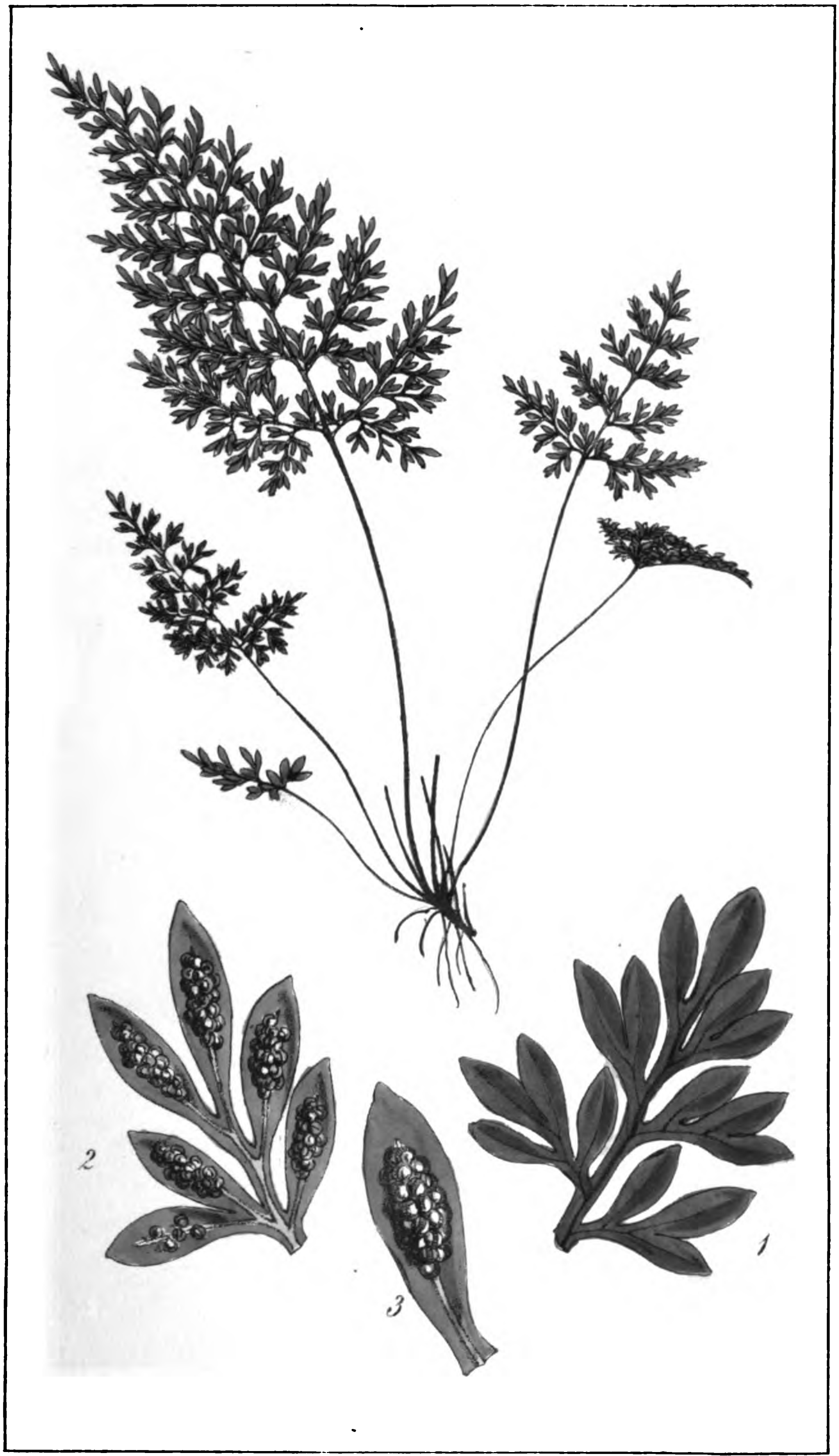
HAB. Sarureen, Khasiya, *Griffith.*

A delicate, quite new *Gymnogramme*, detected as far as we know only by the late Mr. Griffith, in the locality above given. It is evidently of the same group of the Genus as *G. leptophylla*, which the late Professor Link formed into a separate genus under the name of *Anogramme* in 1824, and in which he has been followed by M. Fée. *G. leptophylla* had already been referred to seven different genera.

The present plant grows on trees, and forms dense tufts; its short surculose caudices firmly entangled. The stipites are extremely slender, filiform, from two to four inches long; the fronds from two to three inches in length, extremely delicate, first pinnated, the pinnæ for the most part bipinnatifid, the lowest pinnæ tripinnatifid, all cut into narrow segments, of which the ultimate ones are oblong-lanceolate, rather acute. The nerve occupies the centre of these, but disappears before the point, and it is the apex of this solitary nerve that bears the oblong prominent sorus.

Fig. 1. Portion of a fertile pinna, seen from above. *f.* 2. Lesser portion, seen from beneath. *f.* 3. Ultimate segment of the same, with a sorus:—*magnified.*

Tab. 16.



Fitch del et lith

Pamplin imp.

TAB. XVII.

ASPLENIUM MUCRONATUM, *Pr.*

Humile pendens (?) tenerrimum glaberrimum, frondibus subsessilibus cæspitosis lineari-lanceolatis pinnatis, pinnis approximatis cordato-ovatis acuminatis refractis pinnatifidis, lobis ovatis mucronatis duobus inferioribus majoribus bitrilobis divaricatis, soris oblongis, stipitibus perbrevibus fuscis nudis, rachi viridi gracili anguste alata.

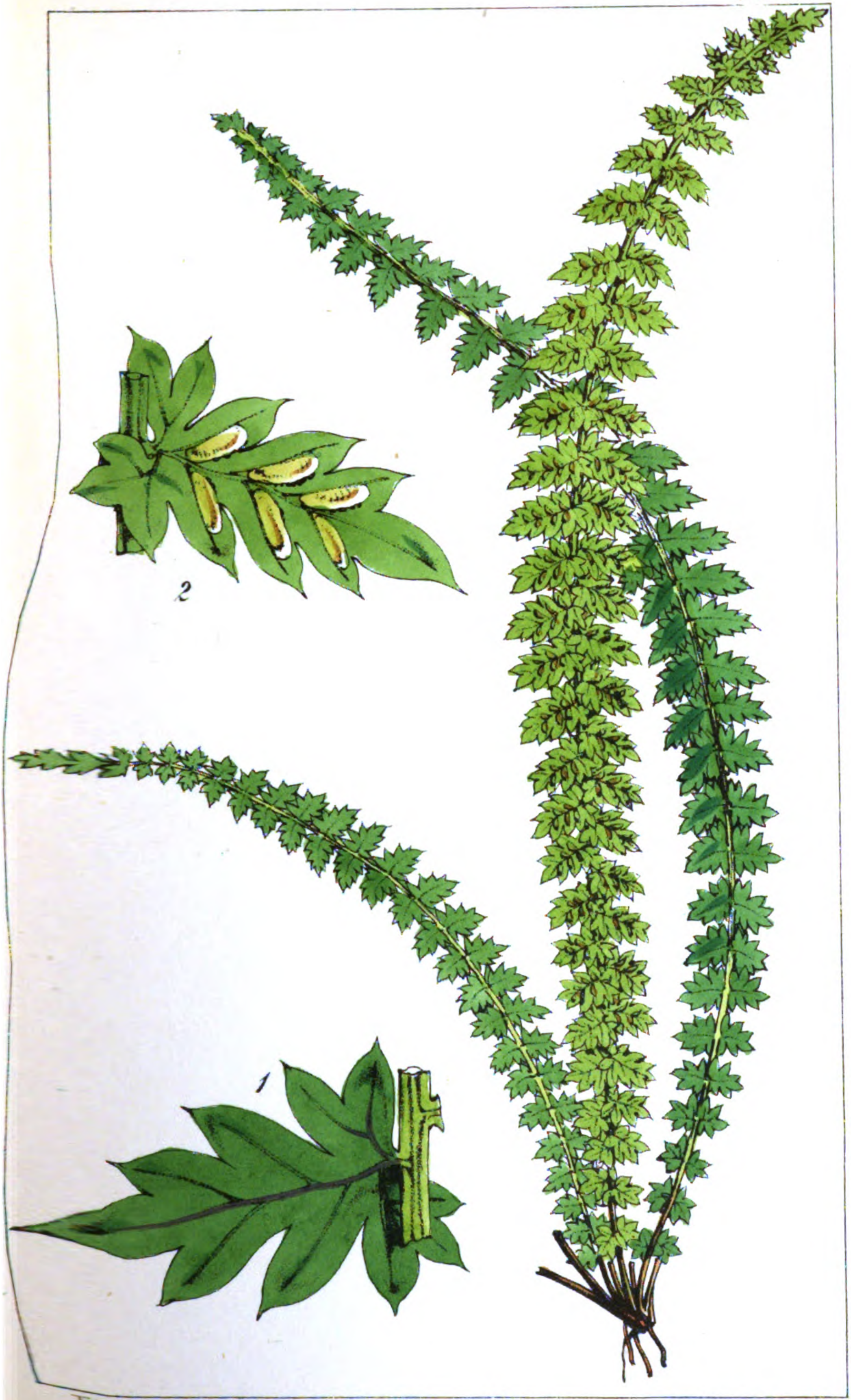
Asplenium mucronatum, *Presl. Delic. Prag.* 1. *p.* 178.
A. retortum, *Kaulf. En. Fil. p.* 171.
A. pteropus, *Kaulf. En. Fil. p.* 170. (*fide Preslii*).
A. laxum, *Raddi, Fil. Bras. p.* 37. *t.* 22. *bis. f.* 4.

HAB. South Brazil, on the rough trunks of trees, *Chamisso, Pohl, Tweedie, Raddi.*

A very delicate and distinctly marked species, The tallest of the fronds is not a span long, extremely delicate, membranaceous, pale green, pinnated to the very apex with closely placed, refracted, cordato-ovate pinnæ; each of which is rather deeply pinnatifid with ovate apiculated simple lobes; the two lower ones only being again divided, bifid, or more rarely trifid, and the lower and usually larger lobe laps over the pale coloured rachis, so as, on the underside of the Fern, to conceal a considerable portion. Sori rather large in proportion to the size of the plant, placed on the nerve which occupies the centre of the side lobes, the terminal and generally the lower lobes being sterile. The stipites rise several together, apparently from a tufted root, (our specimens exhibit no caudex): they scarcely exceed half an inch in length, and are dark coloured, while all the rest of the plant is a very pale subdiaphanous green.

Fig. 1. Fertile pinna, seen from above. *f.* 2. The same seen from beneath:—*magnified.*

Tab 17.



Fitch del et lith

Pamplin imp.

TAB. XVIII.

ASPLENIUM DELICATULUM, *Pr.*

Parvulum, caudice gracillimo longe repente filiformi nudo, frondibus sparsis brevi-stipitatis glaberrimis lanceolatis vel subtriangulari-ovatis acuminatis bipinnatis, pinnis remotis pinnulisve lanceolatis inciso-lobatis, laciniis angustis acutis submonosorosis.

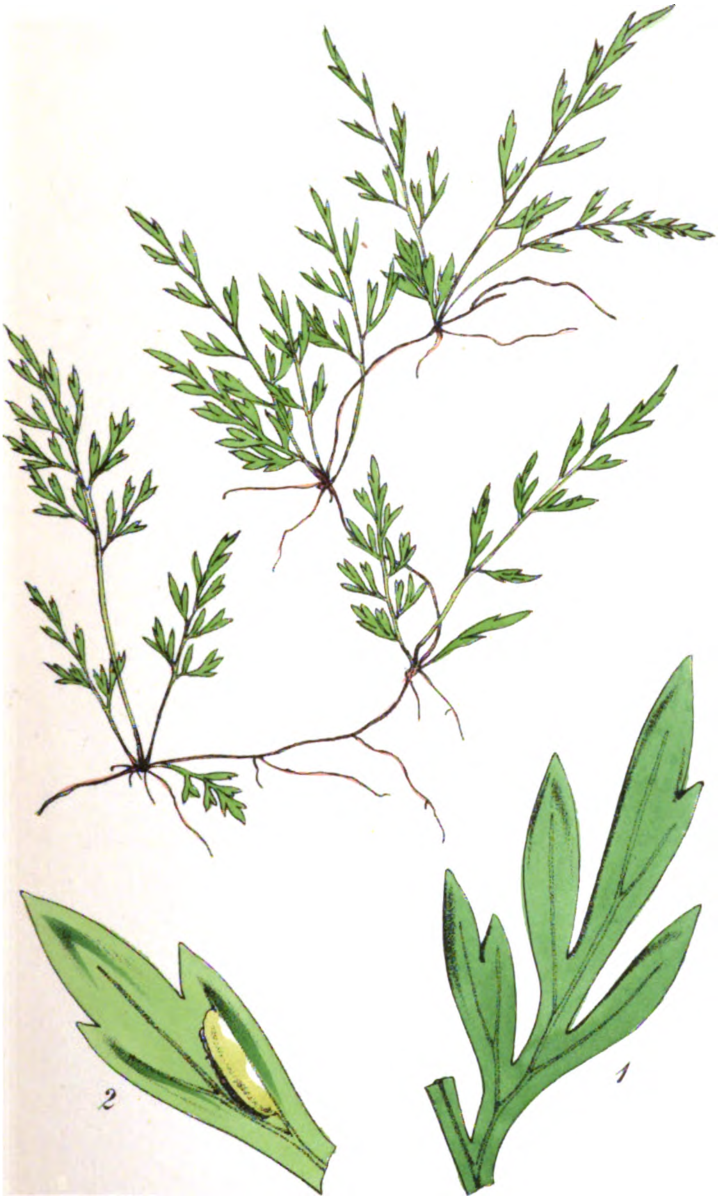
Asplenium delicatulum, *Presl, Reliq. Hænk. p.* 47. *t.* 7. *f.* 3. *Linnæa. v.* 9. *p.* 70.

HAB. Cordillera of Quito, and Trunks of Trees, Cuchaos, *Pœppig*. Casapi, Peru, *Mathews*, n. 1785.

One of the smallest and most delicate of the *Asplenia*, not very unlike some species of *Hymenophyllum* or *Trichomanes* in general habit. Presl's figure in the Reliquiae Hænkeanæ, is extremely unsatisfactory, especially in the tufted fibrous roots. Afterwards the author describes in the Linnæa, from more perfect specimens, the real nature of the caudex. It is singularly long, slender, and creeping. In both those works the affinity of the species with *A fœniculaceum*, H. B. K. (Hook. et Grev. Ic. Fil. t. 92), is noticed, and we ourselves have intimated that it is probably a starved state of that species. The long creeping filiform root or caudex, would also appear to confirm this suspicion. The caudex, here, however, is naked and wiry; in *A. fœniculaceum* tomentose. This may vary, perhaps, according to situation and moisture. Pœppig's specimens, and those of Mr. Mathews, both in our possession, show no disposition to vary from the form here represented. Some of the specimens are indeed smaller, but none larger. It may be referred to the *Darea* or *Cœnopteris* group of *Asplenium*, having the segments and lobes so narrow as rarely to bear more than one sorus on each.

Fig. 1. Portion of the upper side of a pinna. *f.* 2. Fructified portion of the same, seen from beneath:—*magnified.*

Tab 18.



Fitch del et lith

Pamplin imp

TAB. XIX.

ASPIDIUM (Nephrodium) SIMPLICIFOLIUM, *J. Sm.*

Frondibus pinnatis hirsutulis, pinnis paucis elliptico-oblongis integris subserratisve obtusis sessilibus, terminali maxima oblongo-lanceolata acuminata basi inæquali obtusa, arcubus venarum pluribus supra se positis soriferis, soris non raro confluentibus meniscioideis, involucro obsoleto subnullo, stipitibus paleaceo-setosis, rachibus venis venulisque hirsutis, caudice subrepente.

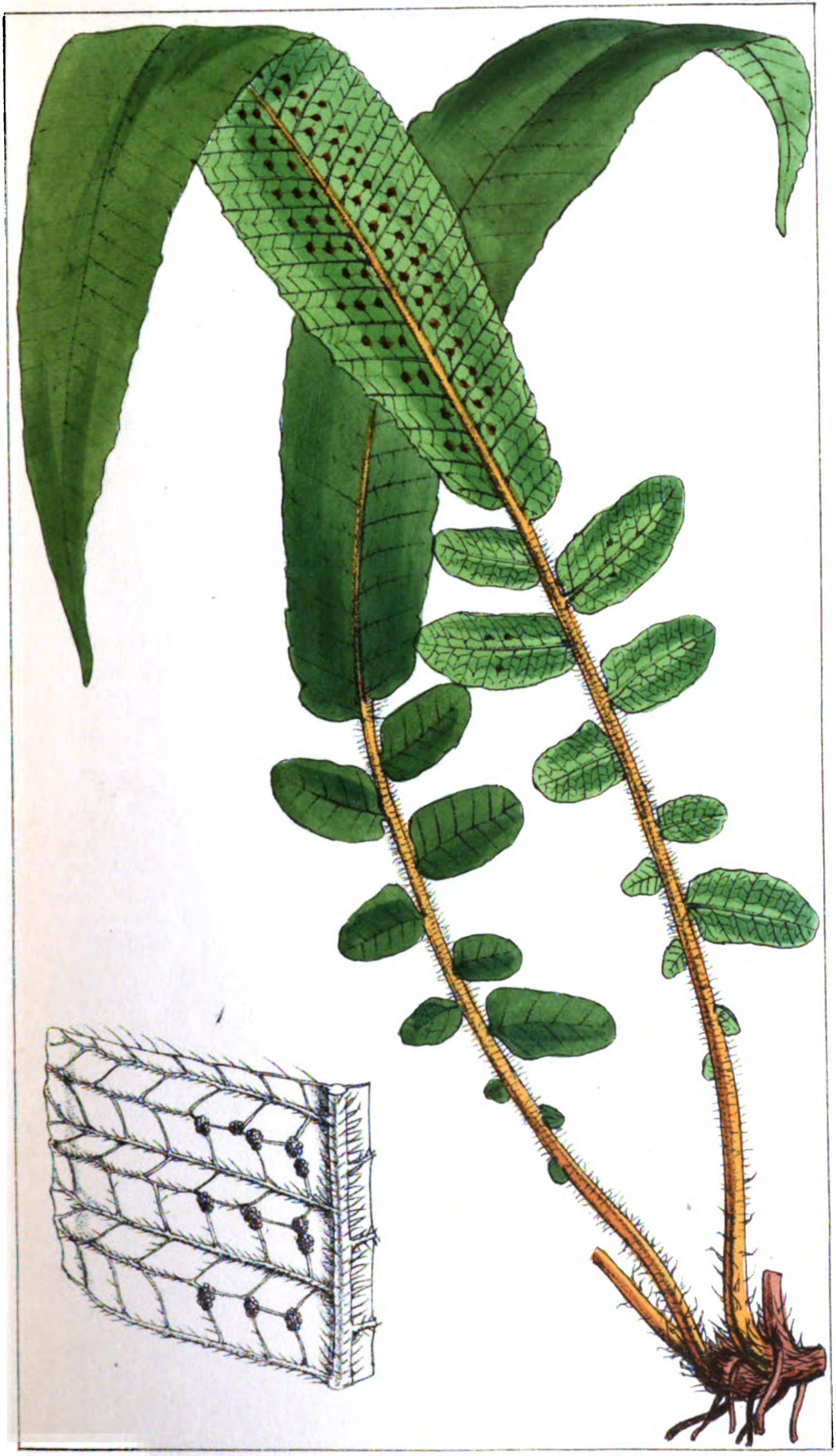
Nephrodium simplicifolium, *J. Sm. in Hook. Journ. of Bot.* 3. *p.* 411, (*name only*). *Presl, Epim. Bot. p.* 50, (*name only*).
Abacopteris simplicifolia, *Fée. Gen. Fil. p.* 310.

HAB. Samar, Phillipine Islands, *Cuming, n.* 315.

To this plant Presl refers the *Nephrodium acrostichoides* of J. Smith, (Cuming's n. 149, from Luzon), which to us appears abundantly distinct; and which J. Smith himself has subsequently referred to another Genus, *Cyclodium*, on account of his having observed it to have orbicular, not reniform, involucres. M. Fée goes further, and separates the *N. simplicifolium* generically both from *Nephrodium* and from *Cyclodium*, and refers it to his new Genus *Abacopteris*, by characters which do not appear to us very valid or intelligible. Indeed, while he describes the indusium "reniforme, sinu affixum," he represents it most distinctly as *orbicular* and *fixed by the centre*. The indusium or involucre is however so indistinct, that we have failed to observe it in our specimens:—and we have further found the sori to be sometimes so confluent as to bring the genus very near to *Meniscium*: and it is not impossible, that it may prove some undeveloped state of a more completely pinnated Fern.

Fig. 1. Portion of fertile pinna:—*magnified.*

Tab 19.



Fitch del et lith

Pamplin imp

TAB. XX.

ASPIDIUM (Nephrodium) HETEROPHYLLUM.

Frondibus cæspitosis pubescenti-hirsutis simplicibus lingulato-oblongis brevi-acuminatis, sterilibus venis anastomosantibus, fertilibus angustioribus venis simplicibus, ambabus lobato-pinnatifidis lobis obtusis, involucris parvis deciduis, stipitibus brevibus hirsutis sparsimque squamosis, caudice repente.

Nephrodium Blumei, *J. Sm. in Hook. Journ. of Bot.* 3. *p.* 411. *exclus. syn.*

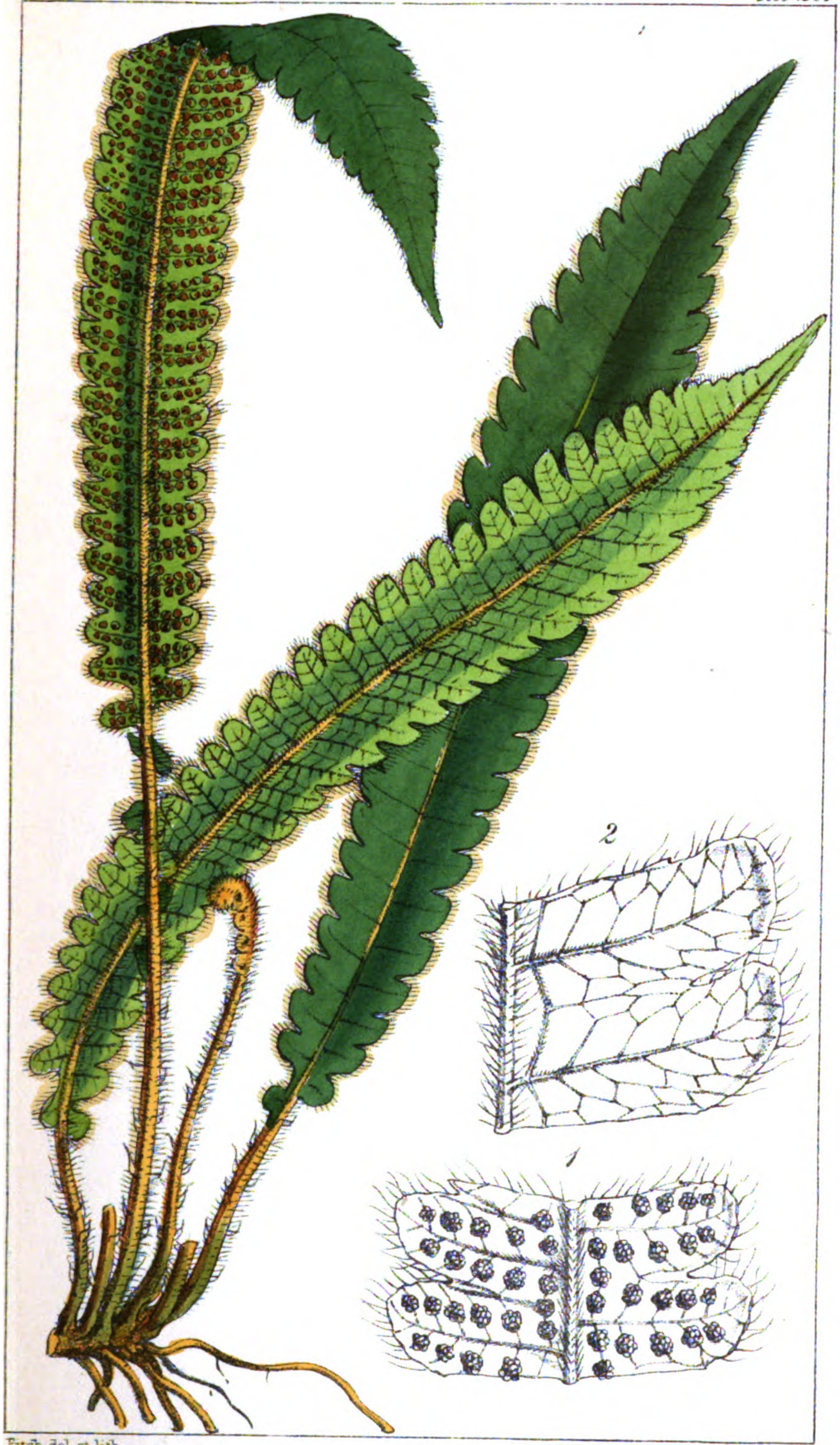
Haplodictyum heterophyllum, *Presl. Epimel. Bot. p.* 51. *Fée, Gen. Fil. p.* 309.

HAB. Samar, Phillipine Islands, *Cuming, n.* 322.

Mr. J. Smith was the first to notice this Fern, and he referred it, in his account of the Ferns of the Phillipine Islands, collected by Mr. Cuming, to *Nephrodium*, being aware of course of the presence of an involucre to the sorus: and, believing it to be identical with the *Gymnogramme canescens*, of *Blum. Fil. Javæ*, tab. 93, he called it *Nephrodium Blumei.* The fertile fronds (supposing the involucre to exist in an early stage) are quite those of *Nephrodium*, but the sterile ones are remarkable for the anastomosing of the veins at a little distance from the primary vein. Hence Presl has formed of this Fern a new genus, between *Pleocnemia* and *Nephrodium*, in which he has been followed by M. Fée. Presl is assuredly correct in excluding Mr. Smith's reference to the *Gymnogramme canescens*, Blume, (Gonophlebium, *Presl*); that plant has a long stipes, *very* acuminated and deeply pinnatifid (below pinnate) fronds, and apparently never any involucre; in shape very much resembling our *Aspidium* (Nephrodium) *Skinneri*, Tab. 24.

Fig. 1. Portion of a fertile frond. *f.* 2. Portion of a sterile ditto:—*magnified.*

Tab 20.



Fitch del et lith.

Pamplin imp

TAB. XXI.

ASPIDIUM (Lastrea) VOGELII.

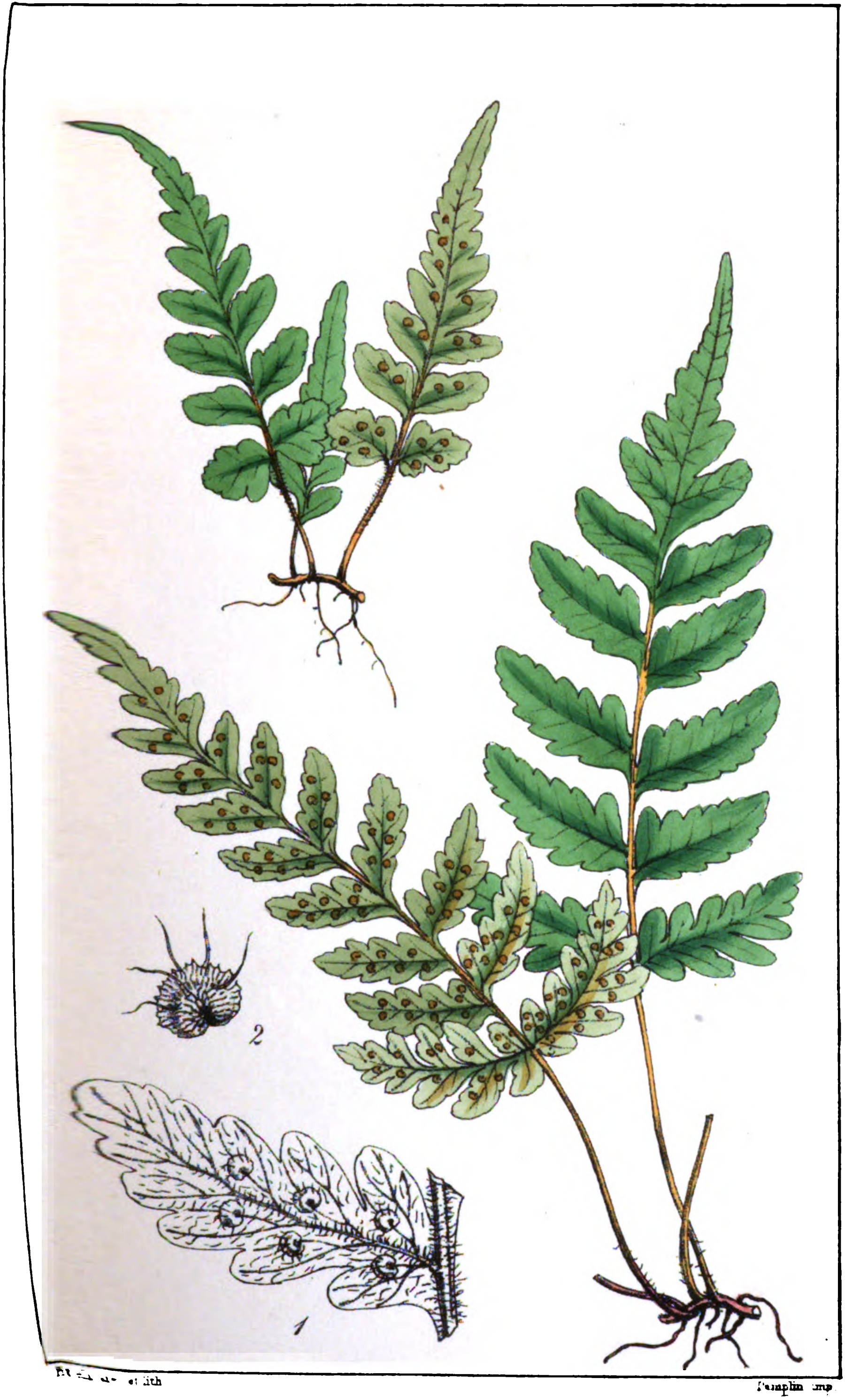
Humile pilosulum, fronde triangulari-ovata acuminata membranacea pinnata, pinnis oblongo-lanceolatis basi decurrentibus lobato-pinnatifidis obtusis infimis subpinnatis, lobis pinnulisve ovatis obtusis, involucris reniformi-orbicularibus paucisetosis, stipite gracili brevi basi setuloso, caudice gracili repente.

HAB. Fernando Po, *Dr. Vogel,* (Niger Expedition).

Several specimens of this little species of *Lastrea* are in the Niger collection formed in Fernando Po, after the Expedition had left the Niger. One of the largest, and one among the smallest of the series are here represented. The frond is thin and membranaceous, semipellucid; the largest scarcely exceeding four inches in length, the upper extremity pinnatifid, ending in a long tapering point; the lower portions pinnate, even bipinnate at the base. The rachis and primary veins, and even the surface, especially beneath, are pilose. The pinnæ are more or less deeply lobed, decurrent with the rachis at the base. Sori generally one to each lobe or segment. Involucre moderately large, orbiculari-reniform, denticulate at the margin, and bearing on its superior surface four or five spreading, jointed, hairs. The stipites are about half the length of the frond, slender, with a few bristly hairs at the base. Caudex slender, almost filiform, creeping.

Fig. 1. Pinna with fructifications, seen from beneath. *f.* 2. Involucre :— *magnified.*

Tab 21.



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Templin imp.

TAB. XXII.

ASPIDIUM (Nephrodium) HOOKERI, *Wall.*

Cæspitosum bipedale, fronde subcoriacea lanceolato-acuminata inferne longe attenuata pinnata, pinnis subapproximatis lineari-oblongis brevi-acuminatis serratis basi cuneatis sessilibus inferioribus plurimis paribus nanis suborbicularibus, siccitate venis inconspicuis, costa venisque subtus pubescentibus, soris parvis subbitri-serialibus, involucris integerrimis, stipitibus brevibus incrassatis.

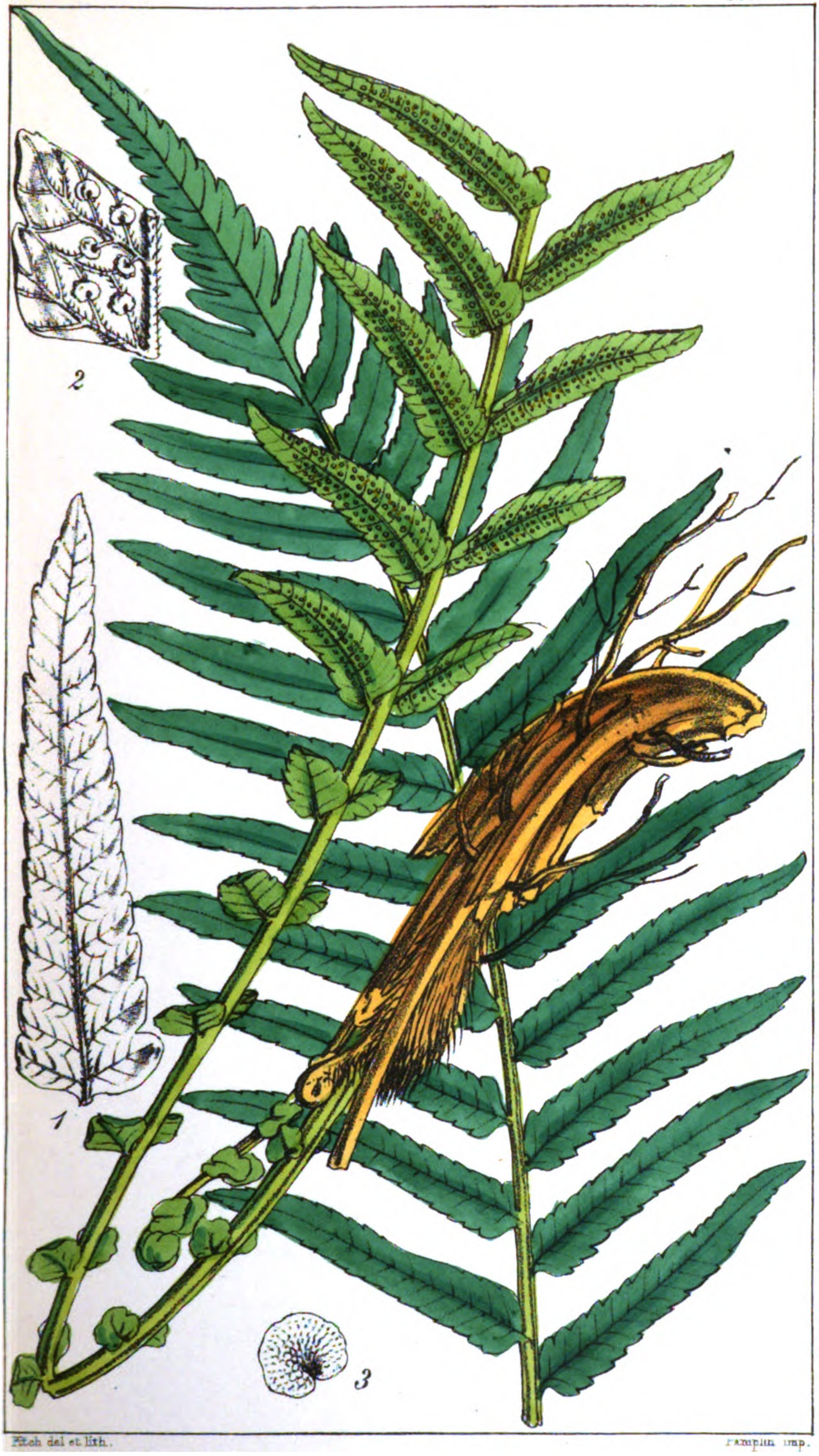
Aspidium Hookeri, *Wall. Cat. n.* 338. *ad p.* 64.

HAB. Dindigul, 4,000 feet elev., Madras Presidency, *Dr. Wight, Herb. Wight, propr. Crypt. n.* 116; Ceylon, *Mrs. Genl. Walker.*

This we consider a very distinct *Nephrodium*, somewhat indeed allied to *N. unitum*, Schott., but having nothing of the harshness and rigidity of that species, and with pinnæ much less deeply lobed, rather serrated than lobed; and the lower pinnæ, unusually small and cordate or rotundate, are extended down to the base of the stipes; these lesser pinnæ are always barren.

Fig. 1. Pinna from a barren specimen; *nat. size.* *f.* 2. Portion of a fertile pinna, seen from beneath. *f.* 3. Involucre:—*magnified.*

Tab 22.



Fitch del et lith.

Pamplin imp.

TAB. XXIII.

ASPIDIUM (Lastrea) KLOTZSCHII, *Hook.*

Humile cæspitosum, frondibus digitalibus et ultra deltoideo-ovatis acuminatis subcoriaceis glabris, pinnulis oblongo-ovatis basi oblique cuneatis pinnatifidis, laciniis ovatis subspinuloso-acutis simplicibus vel inciso-dentatis, soris in singulo lobo solitariis reniformi-orbicularibus membranaceis fuscis, stipitibus gracilibus frondes superantibus inferne squamosis, squamis subulatis patentibus intense fuscis.

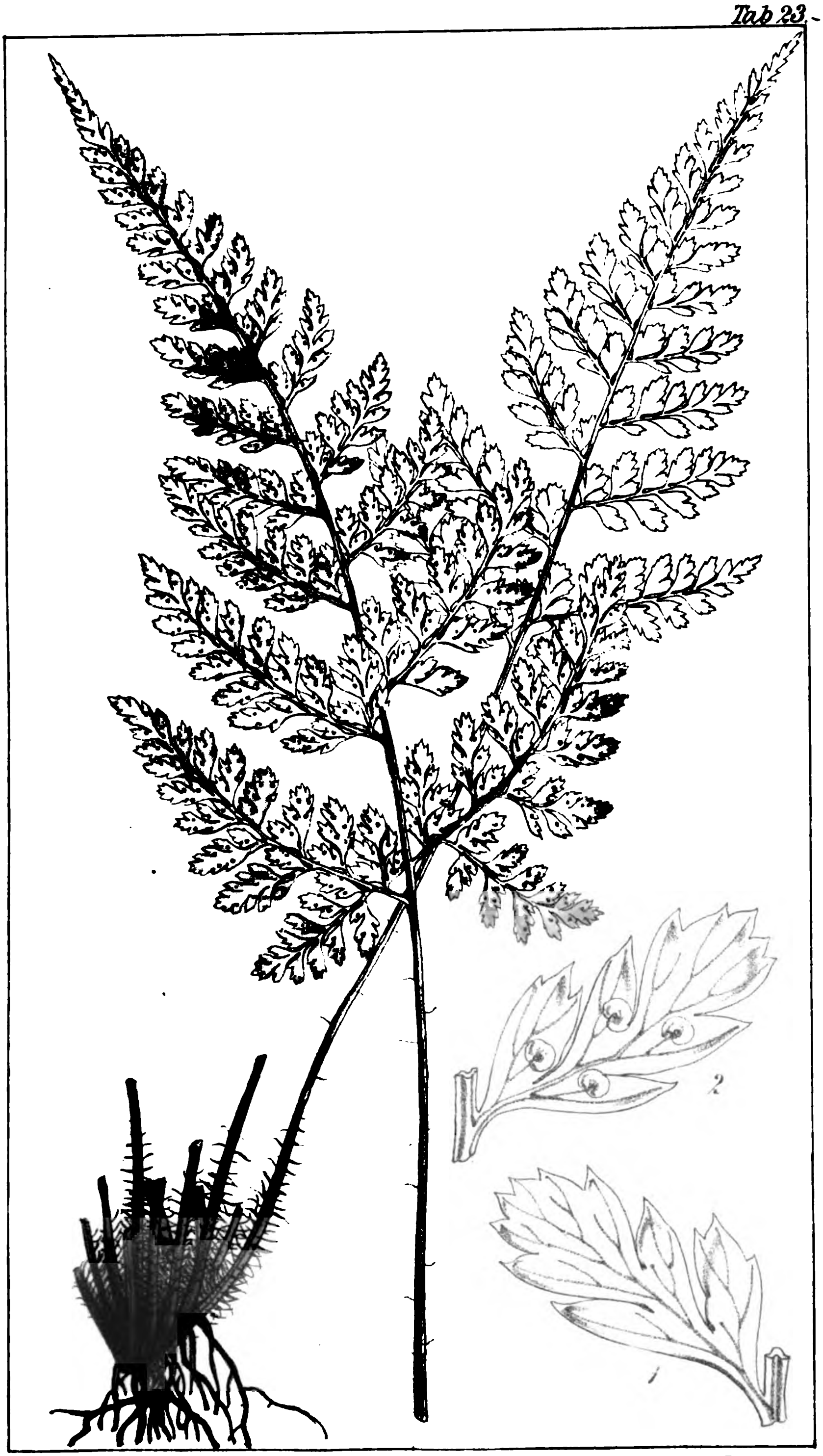
Polystichum aspidioideum, *Klotzsch, in Herb. Nostr.*

HAB. South Brazil, *Sellow.*

Our specimen of this Fern is from Dr. Klotzsch of the Royal Berlin Herbarium, with his name attached; but I am ignorant whether the species be any where published or not. Finding the involucre to be reniform, and not orbicular and peltate, as in *Polystichum*, I venture to place it in the *Lastrea* group of *Aspidium*, or, according to the views of M. Fée, so unsettled is the nomenclature of the genera of Ferns, in *Aspidium* proper. It has, however, unquestionably, very much the general aspect of *Polystichum*, the texture of the frond being firm and somewhat coriaceous and glossy, and the teeth and lobules of the pinnules almost spinulose. It appears to be a distinct species from any hitherto described.

Fig. 1. Upper side of a fertile pinnule. *f.* 2. Under side of ditto, with fructifications.—*magnified.*

Tab 23.



Fitch del. et lith.

Paraboin imp.

TAB. XXIV.

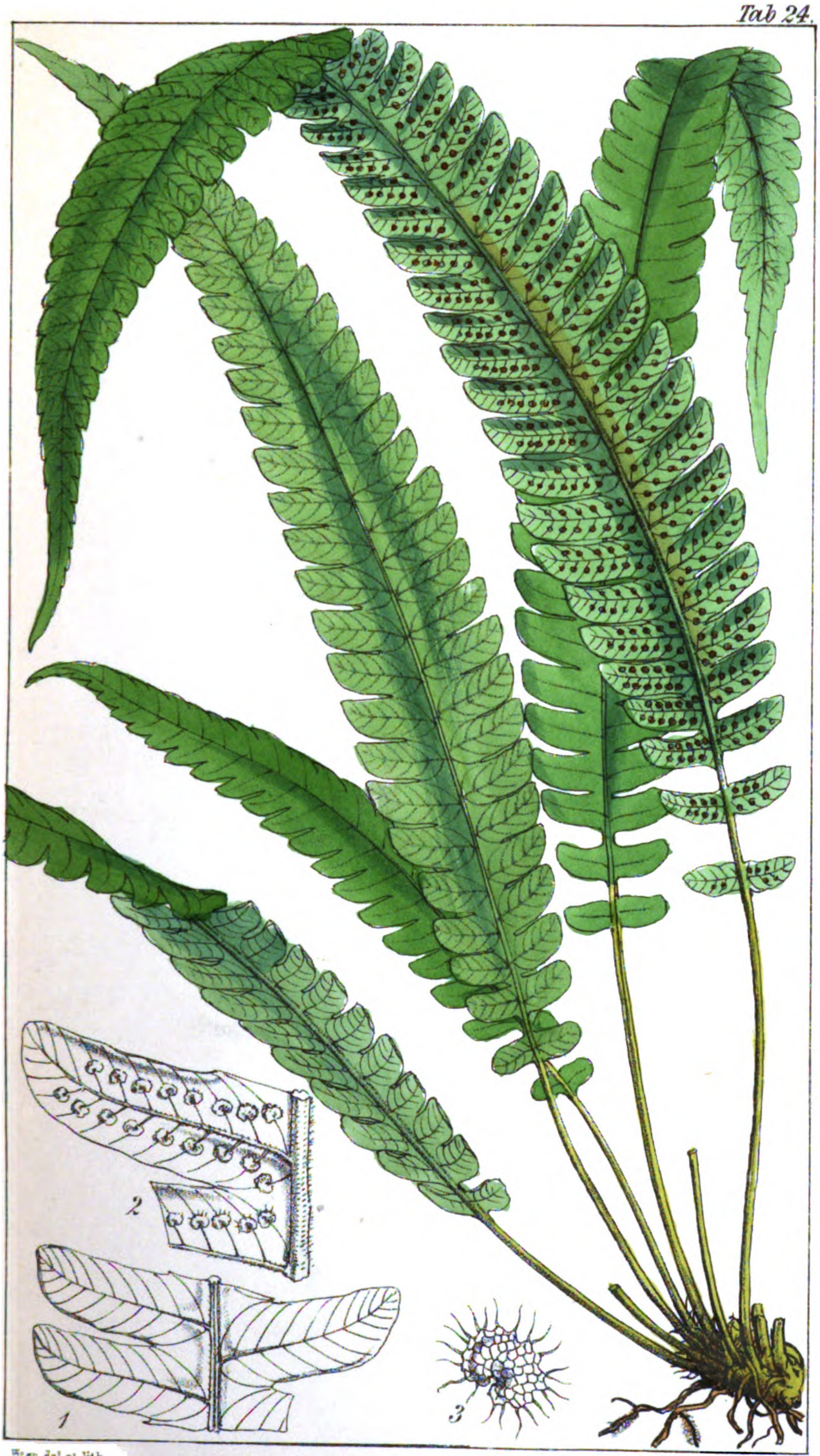
Aspidium (Nephrodium) Skinneri, *Hook.*

Subhumile glaberrimum, fronde lanceolata tenui-acuminata pinnatifida basi pinnata, lobis approximatis pinnisque oblongis sursum subfalcatis acutiusculis, soris copiosis, involucris longe ciliatis, stipite brevi nudo, caudice crasso repente squamoso.

Hab. Guatemala, *G. U. Skinner, Esq.*

Half a score specimens of this pretty Fern, for which I am indebted to Mr. Skinner, uniform in their character, would lead to the inference that such is the normal condition of the plant, and not an imperfectly developed state of some more compound *Nephrodium.* If I am right in this conjecture, it is a very distinct species, and not likely to be confounded with any other. The caudex is stout, repent, and scaly. The stipites, several arising from near the apex of this caudex, short, two inches or more long, rather slender, naked, except a few scales where the base joins on to the caudex. Frond six to eight inches long, somewhat membranous, not opaque, very much tapering at the point, and then the lobes gradually become serratures: the base is not much contracted, but it is truly pinnate with about two pairs of rather remote pinnæ, above them the frond is of one piece, lanceolate, cut into many approximate lobes more than half way down to the costa; lobed like the pinnæ, oblong, with a slight curvature upwards, rather acute. Main rachis slightly pubescent. Fructifications, when present, copious on the centre of every vein. Venation, that common to *Nephrodium.* Involucre reniform, membranous, reticulated, and bearing long ciliæ on the margin.

Fig. 1. Upper side of a portion of the fertile frond. *f.* 2. Underside of ditto. *f.* 3. Involucre:—*magnified.*



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Pamplin imp

TAB. XXV.

ASPLENIUM (Thamnopteris) SIMONSIANUM, *Hook.*

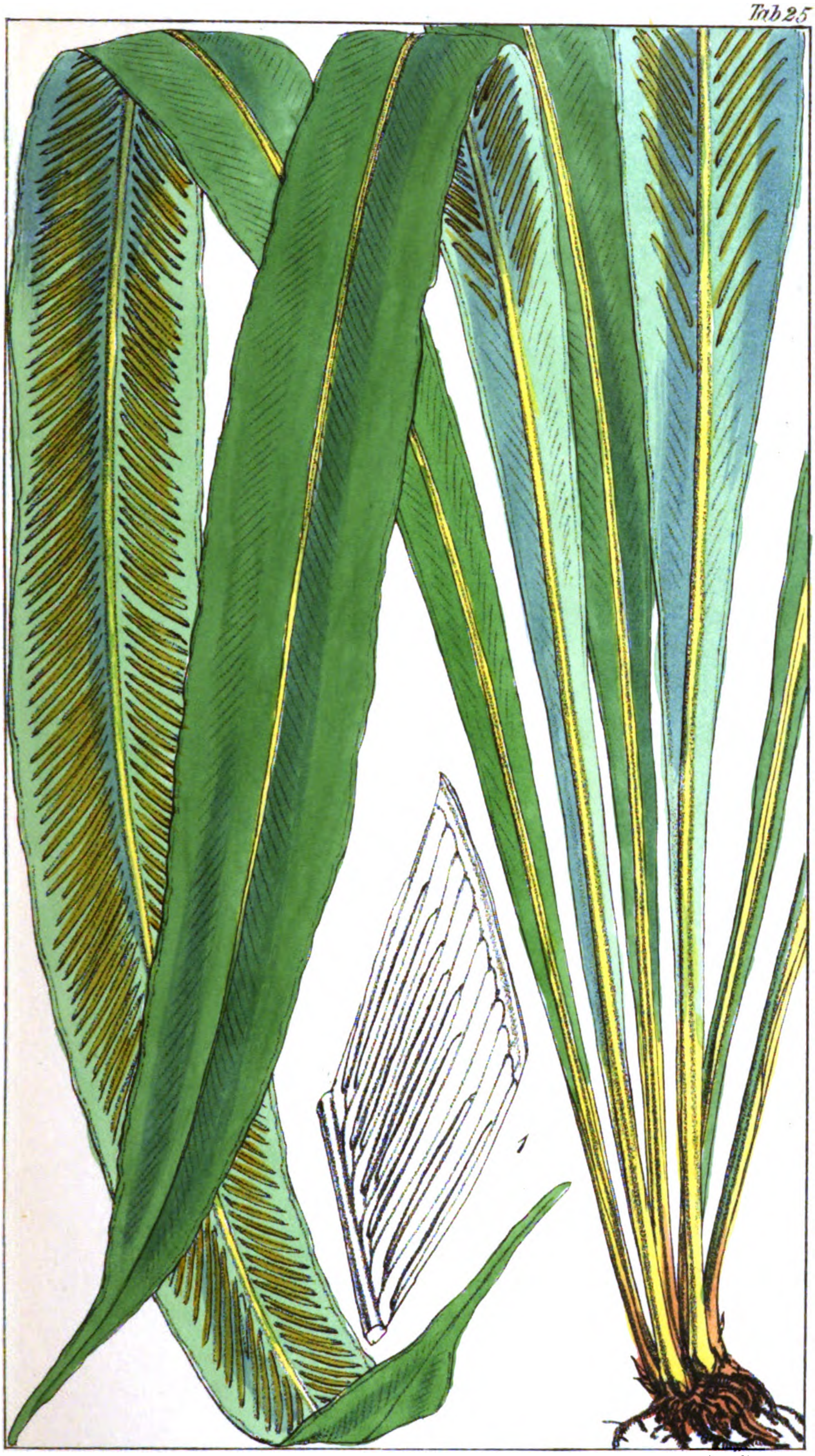
Cæspitosum glaberrimum subcoriaceo-membranaceum, frondibus (sesquipedalibus) elongato-lanceolatis abrupte anguste acuminatis, basi in stipitem perbrevem longe attenuatis angusto-marginatis, venis crebris ante marginem apicibus coalitis in lineam continuam marginalem, soris copiosissimis erecto-patentibus totam paginam fere occupantibus.

HAB. E. Indies, Khasya hills, *Simons*, *n.* 432.

This is a true *Neottopteris* of J. Smith, (Thamnopteris, *Presl*), as far as the union of the apices of the veins into a continued *intramarginal* line is concerned; but such a genus is most unnaturally separated from several simple-fronded *Asplenia.* As a species its affinity is with *Neottopteris Phyllitidis*, J. Sm. (Asplenium, *Don*), and no less with *N. stipitata*, J. Sm. (which I cannot distinguish from the preceding), but the fronds are here much narrower, more suddenly and narrowly acuminated, and at the base very much more attenuated. My only specimens are from Mr. Simons.

Fig. 1. Fertile portion of the frond, seen from beneath:—*magnified.*

Tab 25



Fitch del et lith.

Pamplin imp.

TAB. XXVI.

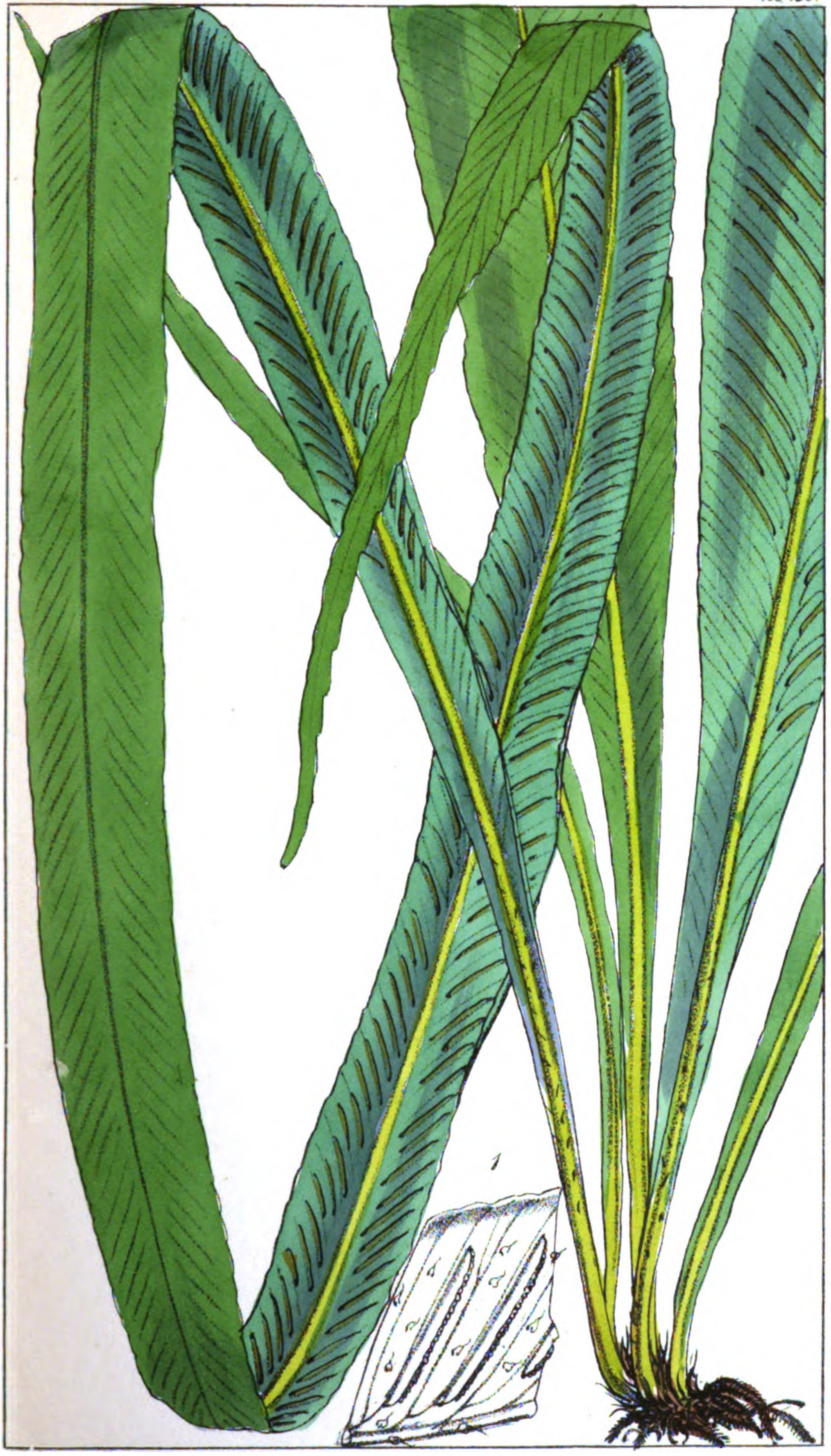
ASPLENIUM LORIFORME, *Hook.*

Cæspitosum parce deciduo-squamulosum membranaceum, frondibus longissime lanceolatis loriformibus obscure serratis angustissime longe acuminatis inferneque in stipitem perbrevem attenuatis, soris copiosis approximatis oblique patentibus.

HAB. On trees in forests at Tanaii, and other places near Pará, Amazon River, *Spruce, n.* 18.

An unusually narrow and elongated simple-fronded species of *Asplenium*, of a very membranaceous texture, pale and bright green colour, remarkably and gradually acuminated at the apex, and no less attenuated at the base. It belongs to the same group as *Aspl. serratum*, along with our *Aspl. Griffithianum* (v. Tab. 28); and is easily distinguished by the above characters.

Fig. 1. Portion of a fertile frond, seen from beneath:—*magnified.*



Fitch del et lith.

Pamplin imp.

TAB. XXVII.

ASPLENIUM PINNATIFIDUM, *Nutt.*

Cæspitosum glabrum, frondibus parvis divaricatis subcoriaceis hastato-lanceolatis longe acuminatis subtus setuloso-squamulosis inferne profunde fere ad rachin pinnatifidis, lobis cordatis sinuato-lobatis dentatisve, medio semipinnatifidis lobis obtusis dentatis, apice subintegerrimis, soris paucis in singulo lobo lineari-oblongis demum confluentibus, stipite inferne ebeneo, caudice brevi repente.

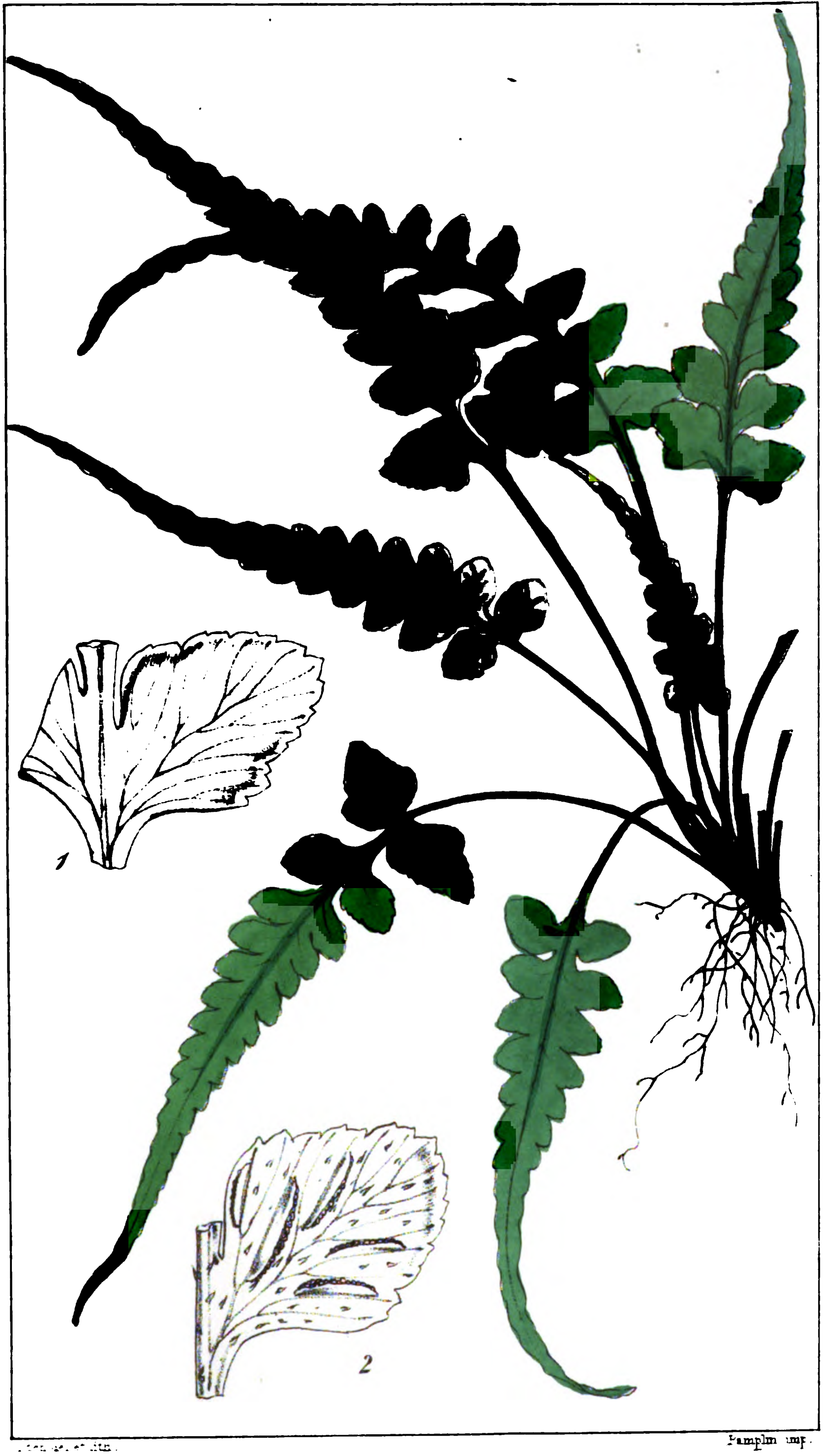
Asplenium pinnatifidum, *Nutt. in Gen. of N. Am. Pl.* 2. *p.* 251.

HAB. U. States, Banks of the Schuylkill, near Philadelphia, *Nuttall, Dr. Bromfield, Mr. J. Mc. Nab.* Tenessee, *Nuttall.* Sandstone rocks, "Mine la Motte," Southern Missouri. (*Herb. nostr.*)

This appears to be a rare species, and gathered by very few Botanists. Muhlenberg, according to Nuttall, seems to have confounded it with *Asplenium* (Camptosorus, *Lk.*) *rhizophyllum*, of which it has a good deal the habit; but, besides the very different venation peculiar to the latter plant, its fronds are entire (not pinnatifid), rooting and proliferous at the extremity.

Fig. 1. Portion of a frond, seen from above. *f.* 2. Fertile lobe, seen from beneath:—*magnified.*

Tab 27.



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Pamplin imp.

TAB. XXVIII.

ASPLENIUM GRIFFITHIANUM, *Hook.*

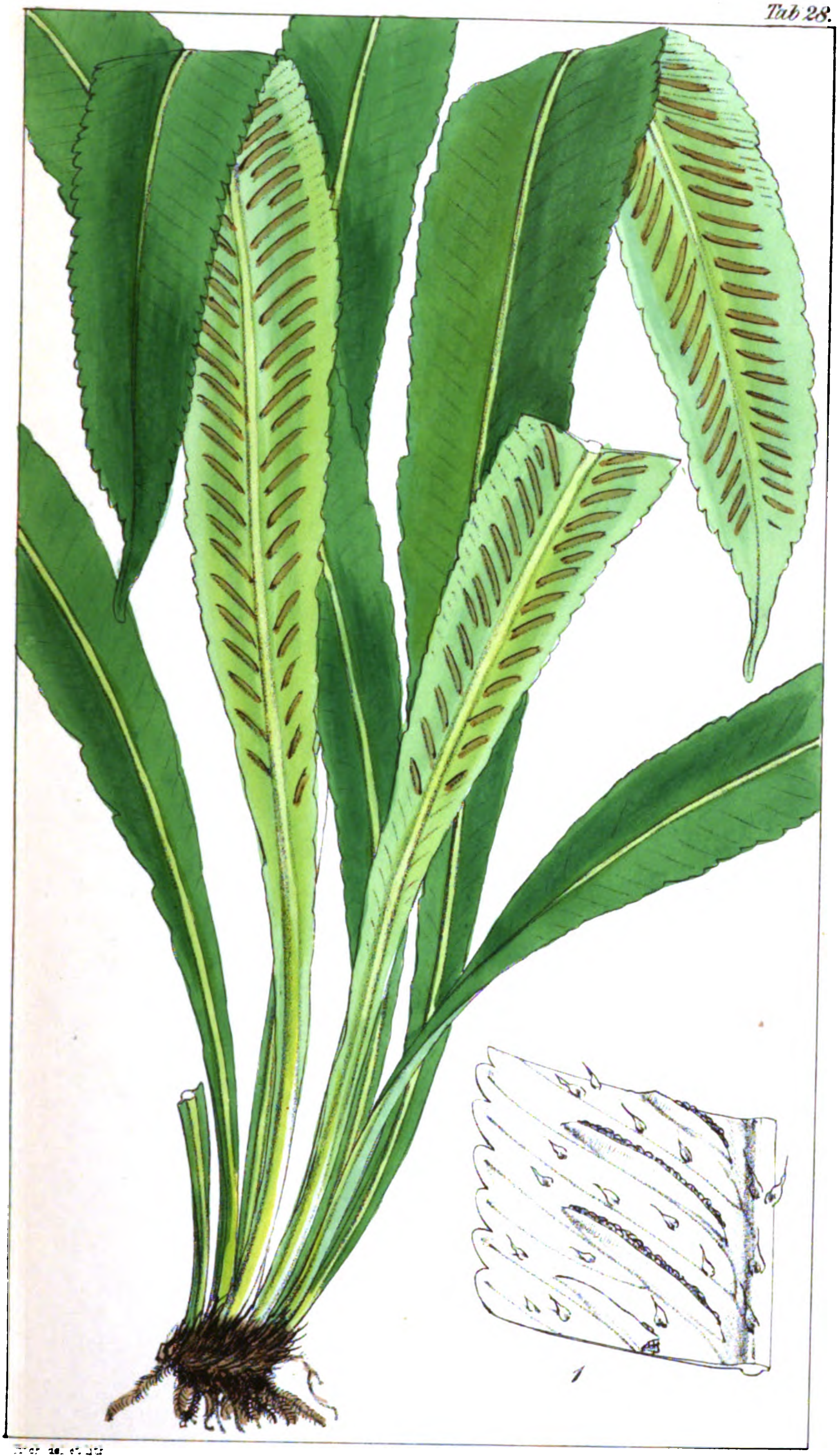
Cæspitosum subcoriaceum minute deciduo-squamulosum, frondibus lanceolatis breviter acuminatis basi longe in stipitem perbrevem attenuatis serratis acumine integerrimo, soris totam fere paginam occupantibus, venis obscuris remotiusculis.

HAB. Mishmee, E. Indies, *W. Griffith, Esq.*

In the general form of the frond, in colour, texture, in the acuminated point, and in the attenuated base, this has a very close affinity with our *Asplenium Simonsianum*: it differs, however, in the shorter fronds, in the serrated margins, and in the more remote and more patent lines of fructifications. If, however, the frond be held up between the eye and the light, the nerves will be found to be all free, each of them terminating a little below the apex of a serrature, whereas in *A. Simonsianum*, they unite so as to form an intramarginal nerve, characteristic of the Genus *Neottopteris*, J. Sm:—Thamnopteris, of *Presl.*

Fig. 1. Portion of the underside of a fertile frond:—*magnified.*

Tab 28.



[illegible] del. et lith. [illegible]

TAB. XXIX.

ASPLENIUM SUBHASTATUM, *Hook.*

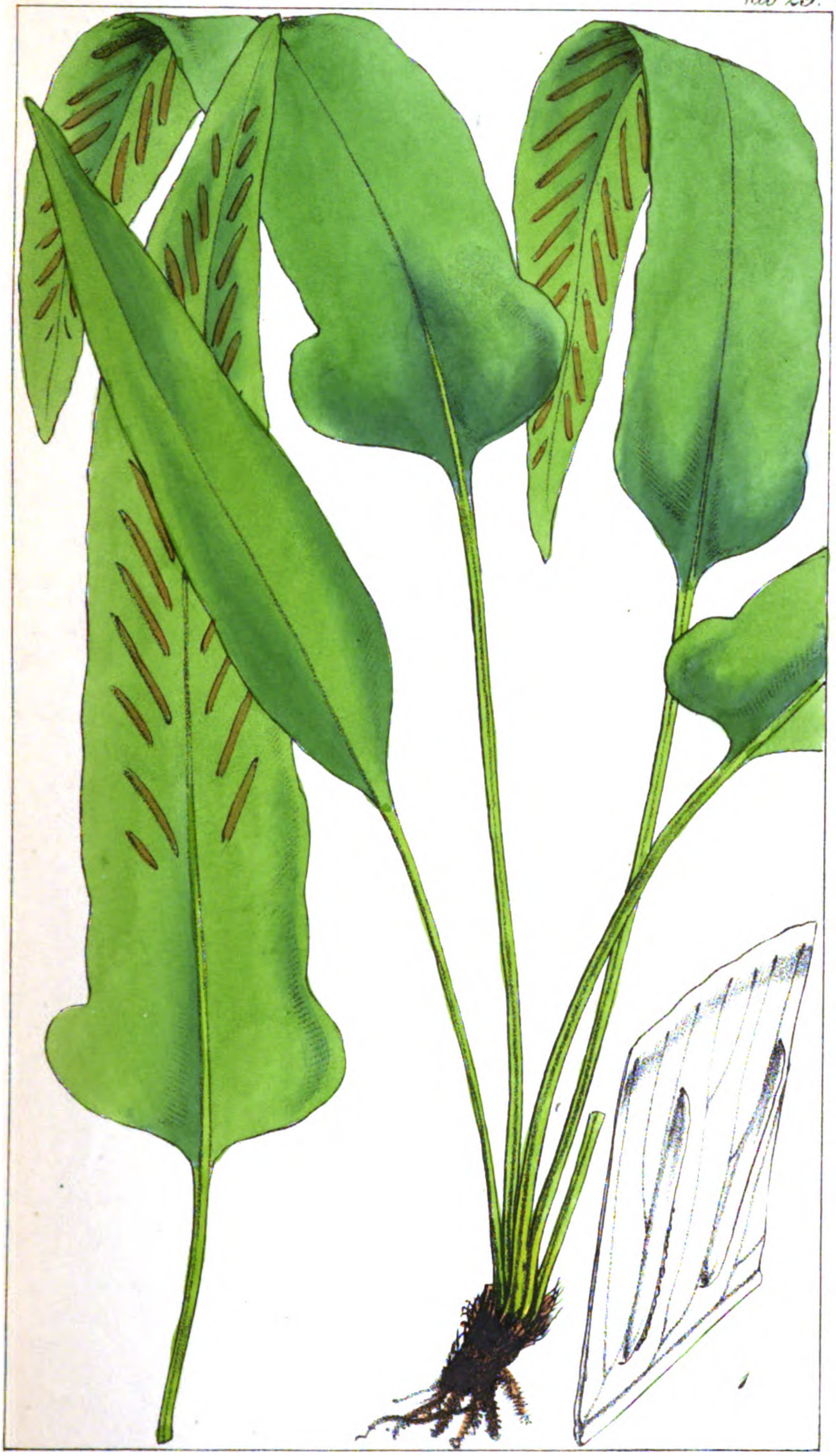
Frondibus cæspitosis subcoriaceo-membranaceis opacis glaberrimis lanceolatis acutis basi subtruncato-cuneatis utrinque lobo obtuso subhastatis, stipite nudo longitudine frondis; soris linearibus, venis erecto-patentibus remotiusculis.

HAB. Caraccas, (en Herb. *Miquel.*)

My specimen of this, as it appears to me, very distinct species of *Asplenium*, I owe to the kindness of Professor Miquel, who sent it to me with many other plants from Caraccas. I can find it nowhere described, and I venture to name it *subhastatum*, from the disposition of the majority of the fronds in my possession to have a spreading lobe on each side of the base, giving the frond a hastate form. It has the habit, rather of a *Scolopendrium* than of a single fronded *Asplenium;* but the fructifications are truly those of the latter Genus, as is the venation; each vein terminating in a slightly clavate apex, and free from any union with the adjacent veins.

Fig. 1. Portion of a fertile frond, seen from beneath:—*magnified.*

Tab 29.



Fitch del et lith

Pamplin Imp

TAB. XXX.

ASPLENIUM SCOLOPENDRIOIDES, *J. Sm.*

Fronde simplici lanceolata subito caudato-acuminata integerrima basi in stipitem perbrevem longe attenuata, soris linearibus, involucris subgeminatis superiore angustissimo reniformi, venis approximatis patentibus.

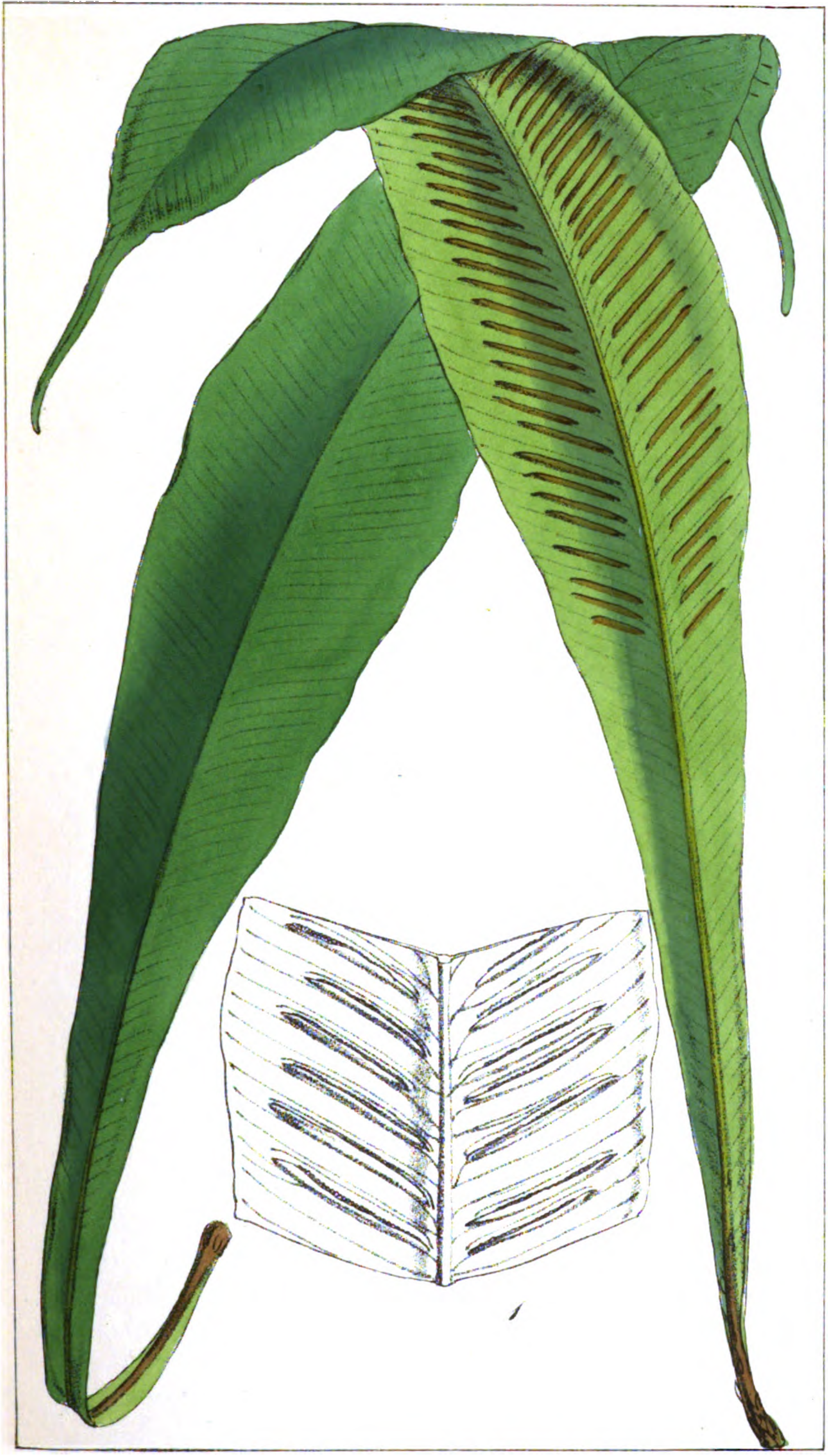
Asplenium scolopendrioides, *J. Sm. in Hook. Jaurn. of Bot.* 3. *p.* 408. *(name only).*

HAB. Leyte, in the Phillipine Islands, *Cuming*, *n.* 318.

This is another *Asplenium*, nearly allied to our *A. loriforme t.* 26, and *A. Griffithianum*, *t.* 28, remarkable for the sudden, narrow, tail-like apex of the frond; and I find a peculiarity also in the involucres, for on the inner or upper side, a nerve-like line will be seen to run parallel with and of the same length as the involucre, leaving a narrow area between it and the contracted involucre attached to the nerve. This line is caused by a slender membrane, evidently a portion of the involucre, remaining after the dehiscence. It gives the appearance of a double involucre, or of one opening in the middle; and it was probably this which suggested the name of *scolopendrioides* to Mr. J. Smith.

Fig. 1. Portion of the underside of a fertile frond:—*magnified.*

Tab 30.



Fitch del et lith

Pamplin imp

TAB. XXXI.

Aspidium (Lastrea) Boutonianum, *Hook.*

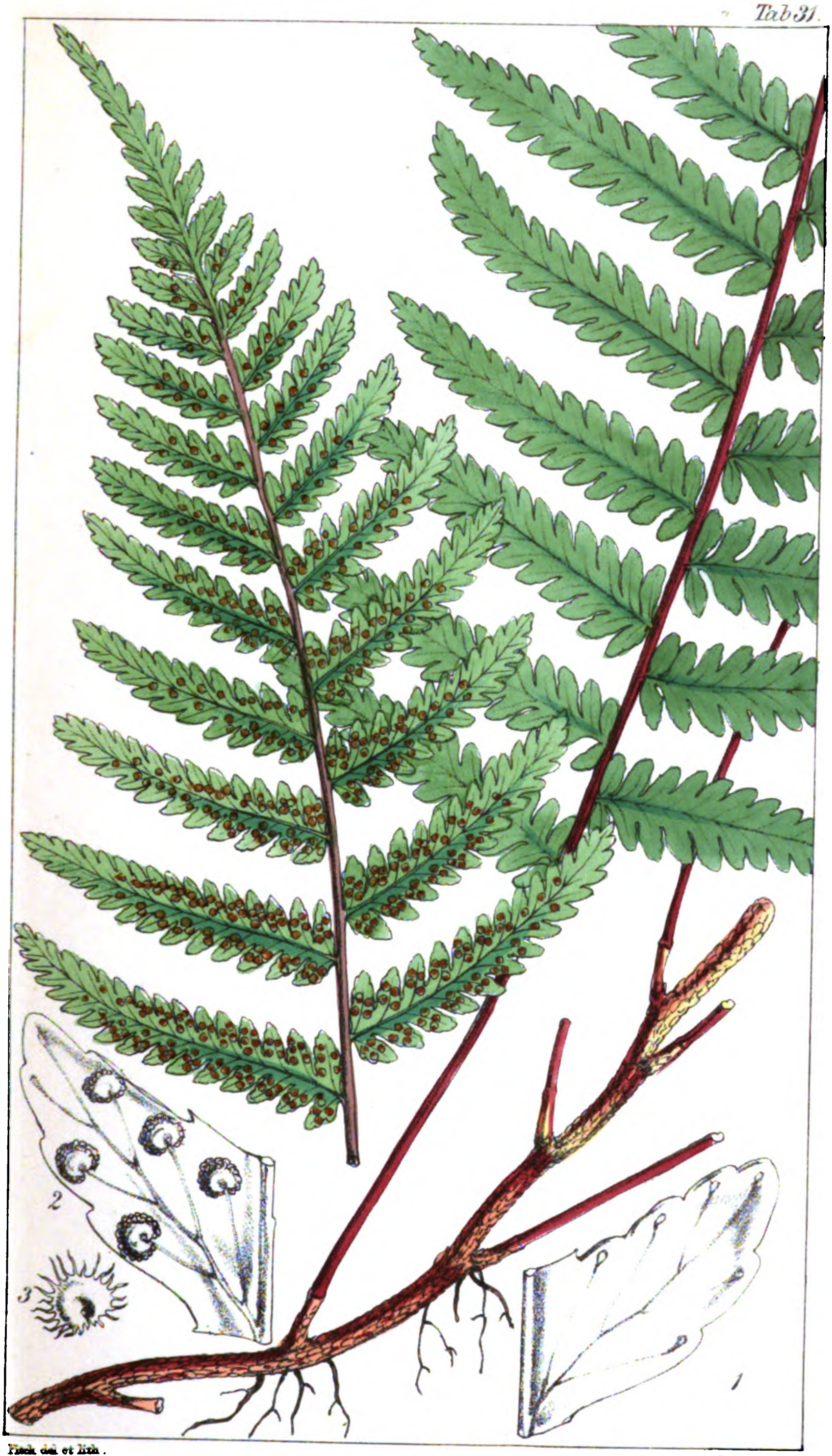
Fronde glaberrima majuscula membranaceo-subcoriacea oblonga acuminata pinnata, pinnis sessilibus oblongo-linearibus obtusis usque ad apicem lobato-pinnatifidis, lobis ovalibus obtusis sinuato-serratis, venis pinnatis apicibus clavatis supra albo-punctatis, soris venulas terminantibus, involucris ciliatis, rachi lævissima supra pubescente, stipite breviusulo versus basin articulato deciduo nudo, caudice longissimo squamis peltatis erosis tecto.

Hab. Eastern summit of the "Montagne longue," Mauritius, *M. Bouton.*

I can no where find that this very distinct *Aspidium* (or *Lastrea*) is described, and yet it is one of the best marked of the family. It appears to have been only collected on the spot just mentioned, and is there said by my correspondent to be extremely rare in fructification. It is remarkable for the white spot or dots on the upper side of the pinnæ where the veins terminate, which appear to be due to a resinous substance exuding from the vein, and forming a small scale which may be easily removed entire,—for the articulated stipes, but, above all, for the great length of the caudex, about the thickness of a writing pen, "which takes root in the rocks and climbs upon the adjacent trees;" this is densely clothed with chaffy peltate scales, torn and erose at the margin.

Fig. 1. Lobe of a pinna, showing the clavate apices to the veins. *f.* 2. Fertile lobe, seen from beneath. *f.* 3. Involucre: —*magnified.*

Tab 31.



Fitch del et lith.

Pamplin imp.

TAB. XXXII.

ASPLENIUM FRAGILE, *Presl.*

Pusillum cæspitosum fragile, frondibus submembranaceis linearibus acutis pinnatis, pinnis oblique deltoideo-ovatis rhomboideisve acutis subflabellatis inciso-lobatis dentatisve, soris involucrisque oblongis, rachibus viridibus superne fuscis, stipitibus atro-fuscis non raro bulbilliferis, bulbillis viviparis.

Asplenium fragile, *Presl, Tent. Pterid. p.* 108. *Klotzsch, in Linnæa, v.* 20. *p.* 355.

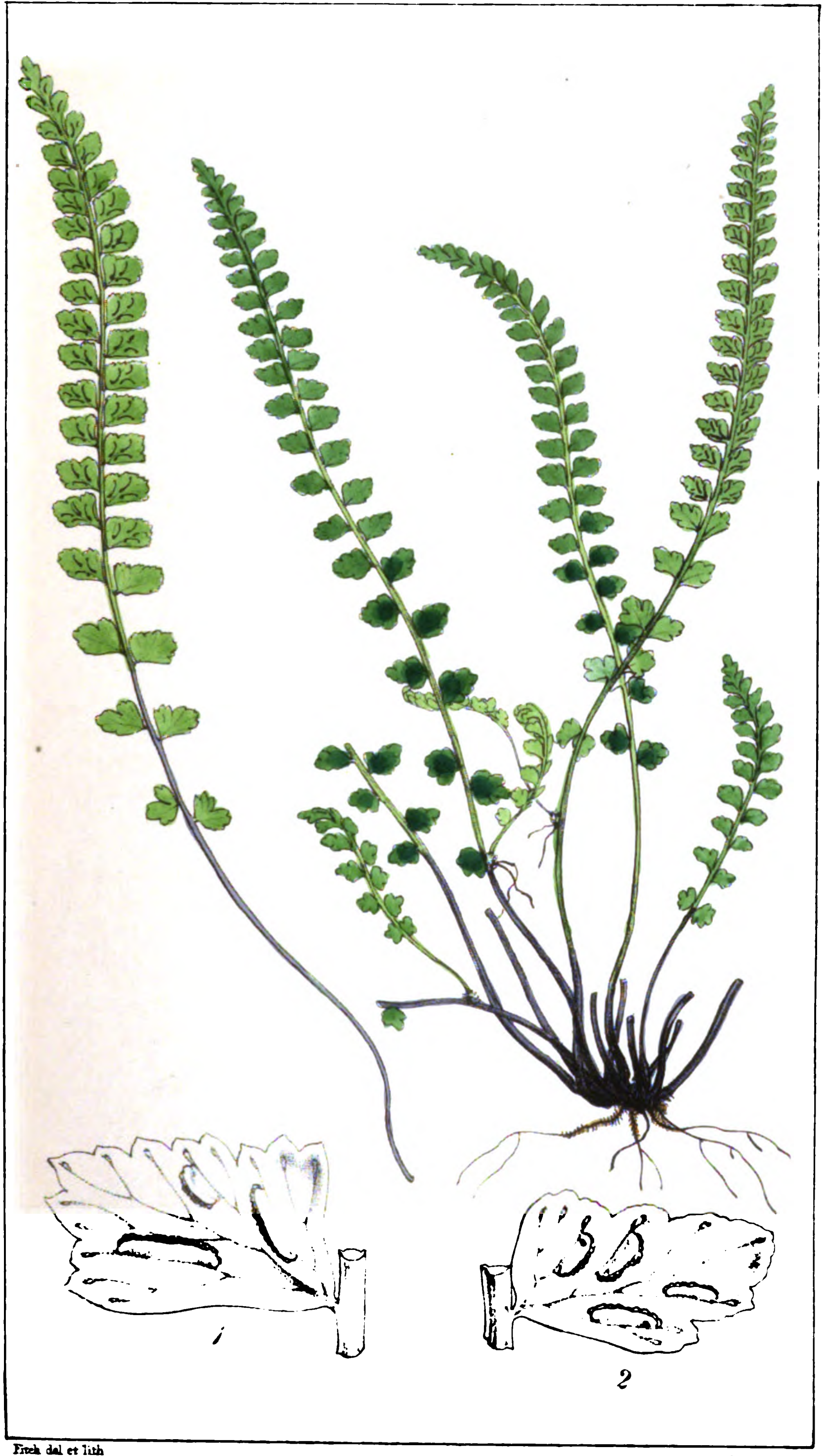
A. stoloniferum, *Presl, Reliq. Hænk.* 1. *p.* 44. *t.* 6. *f.* 4. *excl. Syn.*

HAB. Mountains of Peru, *Hænke.* Chimborazo, *Humboldt*, on rocks at an elev. of 14,000 feet, *Jameson.* Paramo de Mucuchies, Columbia, *Moritz. n.* 326.

Were it not for the curious little viviparous bulbilli seen upon the stipes of the present plant, it would be difficult to say in what respect this species differs from *Aspl. viride* of the European Alps: and it is possible that this peculiarity may originate in its elevated locality, which is no doubt very considerable at all times on the Andes of Columbia. Hænke's countries are always doubtful, for his plants, as given by Presl. Dr. Jameson's are stated with much exactness. The accurate Kunze in Linnæa, v. 13. p. 140, has given this Fern as an inhabitant of Mexico ("ad muros Hacienda de Regia legit *C. Ehrenberg*"); but as he describes the largest fronds (frondes maximæ) to be only two inches long, and the stipes (short) as "glandular, paleaceous and green," the probability is, I think, that the two plants are different.

Fig. 1. 2. Fertile pinna, seen from beneath:—*magnified.*

Tab 32.



Fitch del et lith

Bamphm imp

TAB. XXXIII.

ACROSTICHUM (Neurocallis) AUREO-NITENS, *Hook.*

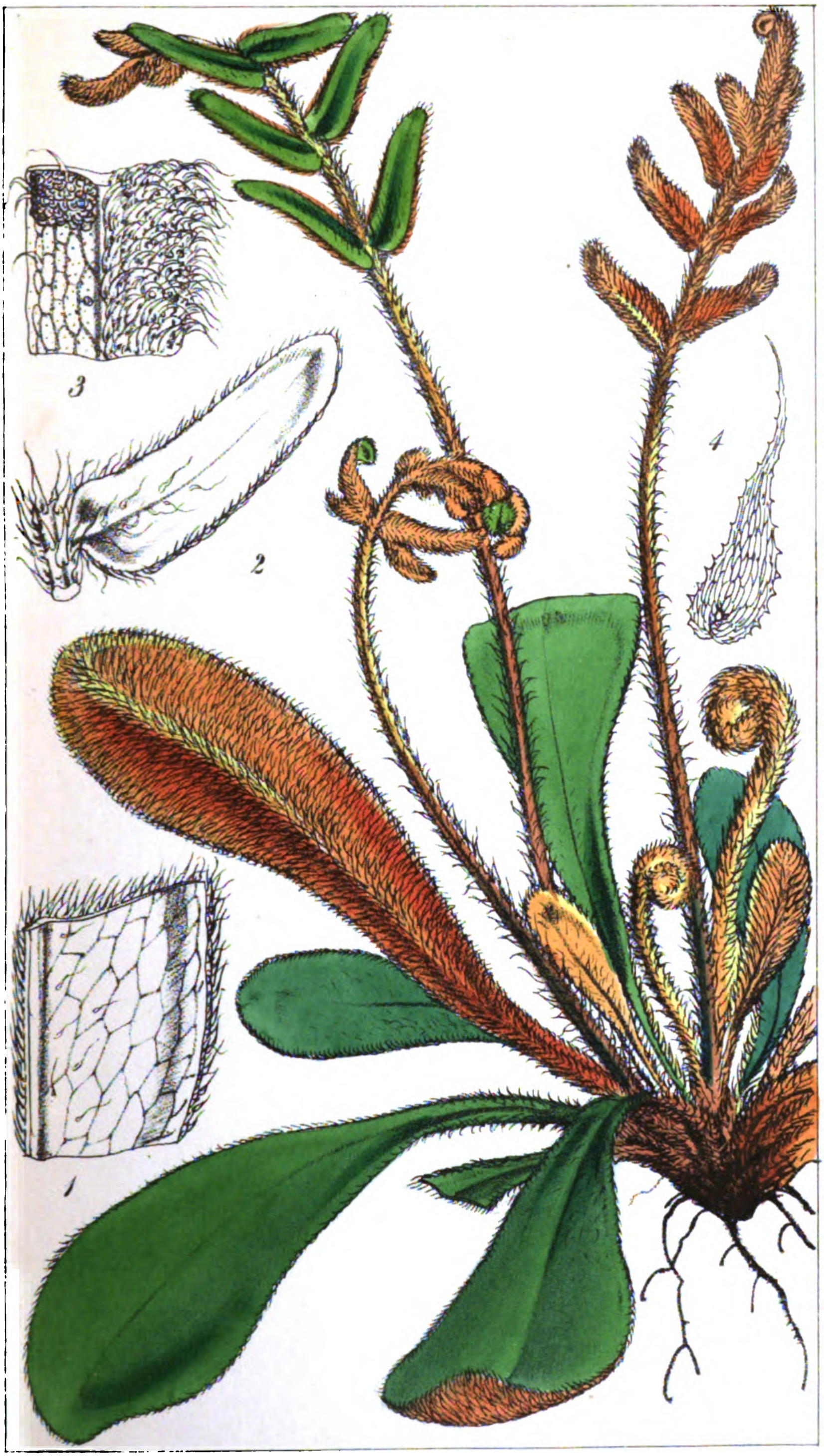
Cæspitosum, frondibus carnoso-crassis subcoriaceis biformibus subtus (junioribusque supra) squamis imbricatis copiosis aureo-nitentibus tectis interne reticulatim venosis, sterilibus spathulatis integris integerrimisque costatis in stipitem brevem attenuatis, fertilibus longe stipitatis pinnatis, pinnis oblongis obtusis costatis, stipitibus aureo-squamosis.

HAB. Galapagos, *Cuming*, *n.* 109. Chatham Island, Galapagos, *Capt. Wood, R. N.*

A very beautiful and remarkable Fern, which I possess from two travellers, but both specimens probably gathered in the same locality, Chatham Island, of the Galapagos. From apparently a small fibrous root, many fronds arise, the whole underside and stipites of which are densely clothed with toothed lanceolate and much acuminated scales, of a glossy golden colour. The upper sides of the fronds have only a few scattered chaffy hairs. The sterile fronds are simple (undivided), but the fertile ones are pinnated with 5-9 rather small, oblong, obtuse, sessile pinnæ, the underside of which is uniformly clothed with capsules mixed with the chaffy scales:—the venation, very difficult to be accurately distinguished, consists of anastomosing veins, which form oblong, hexagonal areoles: so that this would be a true *Acrostichum* of Presl, probably a *Neurocallis* or *Cheilolepton* of M. Fée (if the two genera are in any way really distinct): yet having a habit very different from any known species of them.

Fig. 1. Portion of a sterile frond, showing the anastomosing of the veins. *f.* 2. Portion of a fertile pinna, seen from above. *f.* 3. Portion of the same, seen from beneath, with the scales in part, and the capsule in part, removed to show the reticulations. *f.* 4. A scale from the frond:—*magnified.*

Tab. 33



Fitch del. et lith.

Pamplin imp.

TAB. XXXIV.

POLYPODIUM MACROCARPUM, *Presl.*

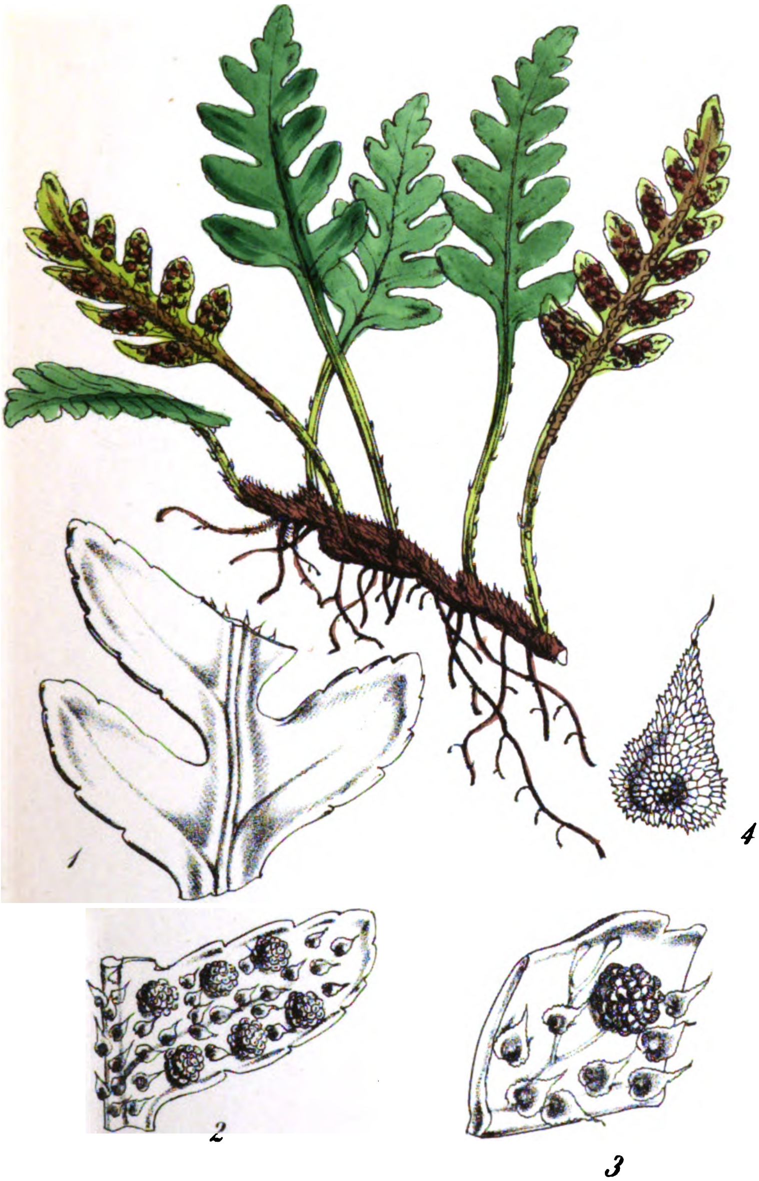
Humile coriaceum, frondibus oblongo-ovatis obtusis profunde pinnatifidis subtus stipiteque equilongo squamis ovatis acuminatis peltatis serratis paleaceis, soris rotundatis majusculis demum confluentibus, caudice longe repente squamoso.

Polypodium macrocarpum, *Presl, Reliq. Hænk. p.* 23. *t.* 1. *f.* 4.
Pleopeltis pinnatifida, *Gill. in Hook. and Grev. Ic. Fil. t.* 157.

HAB. Peru, *Hænke, (Presl)*, Rocks, Puruchucu, Peru, *Mathews*, n. 600. Andes above Ticicaca, Bolivia, *Mr. Pentland.* Massa Fuera, S. Pacific, lat. 34°, *Cuming*, n. 1352.

When this figure was drawn from a specimen gathered at Massa Fuera, South Pacific, in a latitude corresponding with Valparaiso, I little suspected it would prove the same as *Pleopeltis pinnatifida*, Gillies in Icones Filicum; but such proves to be the case, and further that this is identical with the *Polypodium macrocarpum* of *Presl*, a name which should unquestionably, on every account, be preferred. It is a true *Polypodium*, of the same group as our *Polypodium vulgare*, and we are now able to give some additional habitats for this widely extended species. Some of our specimens, from the Andes of Ticicaca, (14,000 feet above the level of the sea), have the fronds exactly spathulate, a little lobed at the base: but this is to be considered as an abnormal form, and from this we have all the intermediate states to the many lobed and elongated form given in the Icones Filicum.

Fig. 1. Portion of a frond, upper side. *f.* 2. Fertile lobe, seen from beneath. *f.* 3. Portion of a lobe with a sorus. *f.* 4. Scale from the back of a frond:—all more or less *magnified.*



[illegible] Fampln imp

TAB. XXXV.

GYMNOGRAMME RUTÆFOLIA, *var* Hispanica.

Humilis, pilis articulatis undique longe villosa, frondibus oblongis obtusis pinnatis, pinnis subchartaceis trapezoideo-ovatis obovatisve basi cuneatis subpetiolatis integris inciso-lobatisque inferioribus nunc iterum subpinnatis, lobis cuneatis, soris linearibus brevinsculis liberis, stipite frondem subæquante, caudice brevi horizontali crasso, radicibus dense fibroso-cæspitosis.

Grammitis rutæfolia, *Br. Prodr. Fl. Nov. Holl. p.* 2.

Gymnogramme rutæfolia, *Hook. et Grev. Ic. Fil. t.* 90. *Lehm. Pl. Preiss.* 2. *p.* 110.

Pleurosorus rutæfolius, *Fée, Gen. Fil. p.* 180.

β. major; pinnis omnibus pinnatifidis, pilis brevioribus magis glandulosis.

Gymnogramme subglandulosa, *Hook. et Grev. Ic. Fil. t.* 9.

Plerosorus cuneatus, *Fée. Gen. Fil. p.* 180.

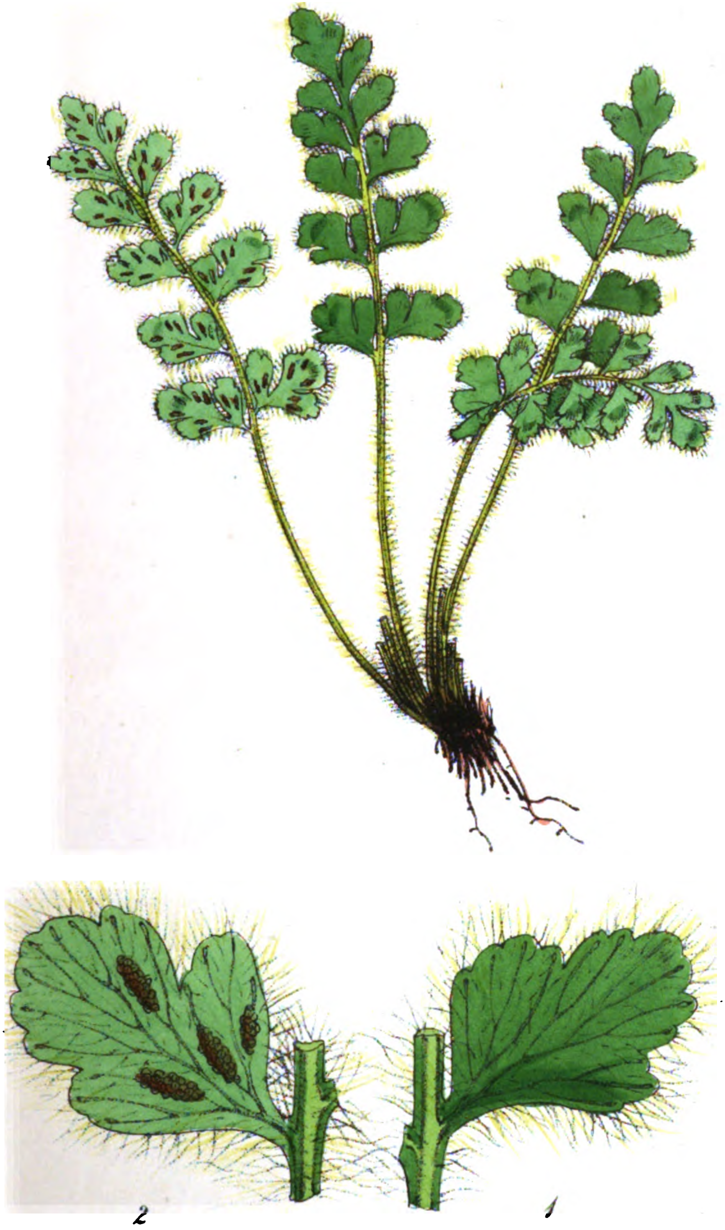
γ. *Hispanica;* frondibus tenuioribus magis herbaceis. (*Tab. nostr.* XXXV).

Grammitis Hispanica, *Cosson, Notes sur quelques Plantes Nouv. du Midi de l'Espagne, p.* 48.

HAB. γ. South of Spain; Puerto del Viento, in the Sierra de Ronda, 1849, (n. 543), and in the Sierra Nevada, in clefts of rocks at Cortijo de la Vibora, 1851, *Bourgeau.*

We would gladly, if we could, with propriety, have kept the European *Gymnogramme* distinct, as M. Cosson has done, from the Australian *G. rutæfolia.* But the utmost we can make of it is a variety, of a thinner texture and greener colour. It is, however, a remarkable fact, that a Fern common enough in Australia, to which country it was, till now, supposed to be peculiar, should prove to be an inhabitant of the elevated Sierras in the South of Spain!—We are also satisfied that we do right in uniting our *Gymnogramme subglandulosa* with the present species.

Fig. 1. Sterile pinna. *f.* 2. Fertile pinna, seen from beneath:—*magnified.*



[illegible] del. et lith.

[illegible] imp.

TAB. XXXVI.

DIPLAZIUM (Oxygonium) CORDIFOLIUM, *Bl.*

Frondibus simplicibus elliptico-ovatis acuminatis integerrimis basi cordatis v. subsagittatis (non raro proliferis) lobato-pinnatifidisve vel pinnatis, pinnis paucis (3-5) lateralibus ovato-lanceolatis sessilibus terminali maxima basi cordata v. sagittata, involucris plerisque elongatis angustissimis, venis marginem versus anastomosantibus, stipitibus glabris nudis basi solummodo parce squamosis.

1. Frondibus integris v. basi lobato-sagittatis.

Diplazium cordifolium, *Bl. En. Fil. Jav. p.* 190. *Hook. Ic. Pl. t.* 184.

Asplenium ovatum, *Wall. Cat. n.* 195.

2. Frondibus integris pinnatisve.

Oxygonium ovatum, *Presl, Tent. Pterid. p.* 118. *J. Smith, in Hook. Journ. Bot.* 4. *p.* 178. (1842).

Callipteris ovata, *J. Smith, in Hook. Journ. Bot.* 3. *p.* 409. (1841). *Fée. Gen. Fil. p.* 219.

Anisogonium integrifolium, *Presl, Tent. Pterid. p.* 116. *Ejusd. Epimel. Bot. p.* 92.

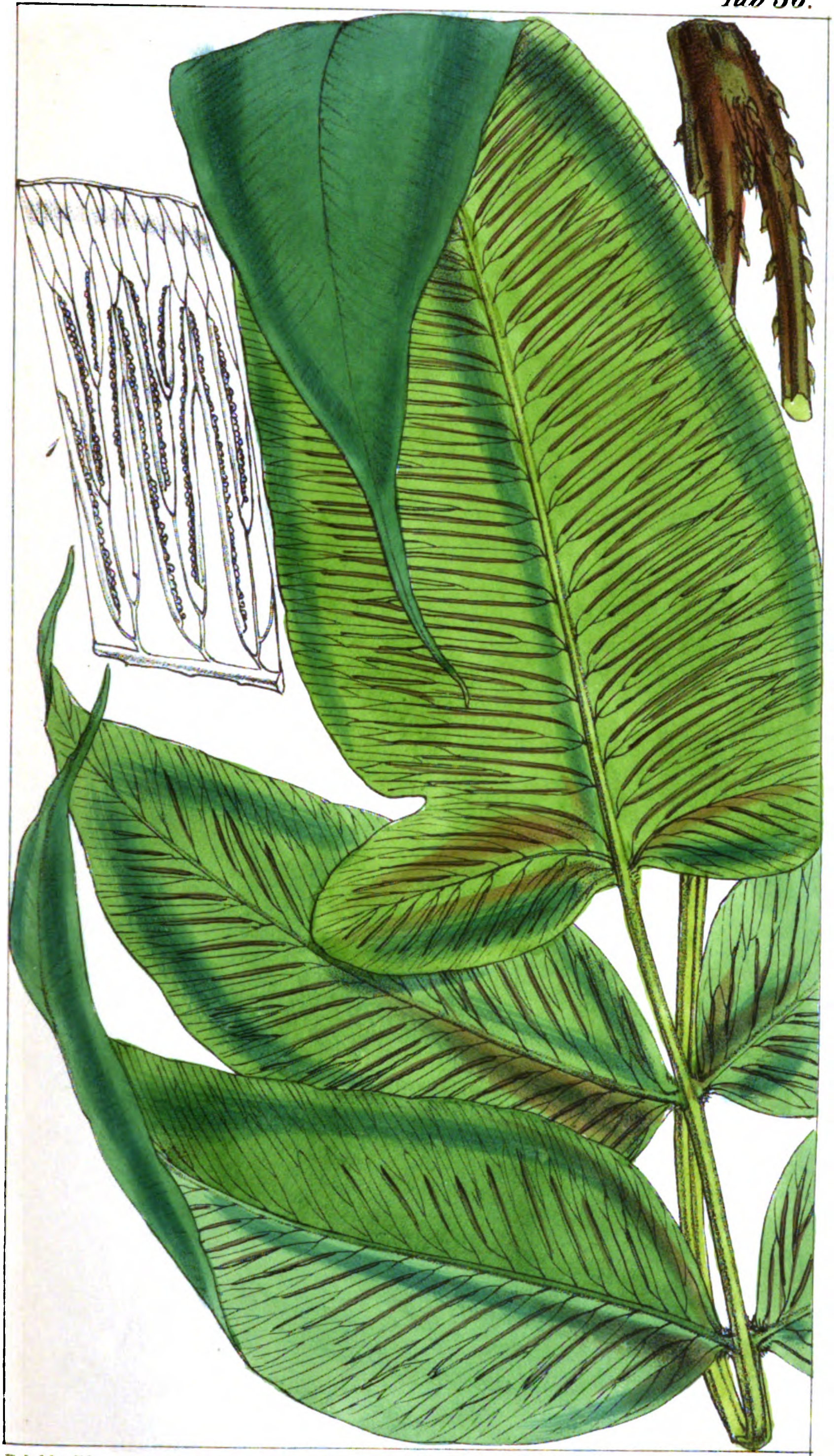
Diplazium integrifolium, *Blume. En. Jav. p.* 190. (*fide Presl.*)

HAB. Java, *Blume.* Singapore, *Wallich, Sir Wm. Norris.* Isle of Leyte, *Cuming. n.* 307. Penang, *Sir W. Norris.*

We had already represented the simple fronded state of this plant in the Icones Plantarum above quoted, and we now give the pinnated form of the same, which has, by some, been mistaken for a different species. We cannot agree with those Botanists who refer it to the genus *Callipteris*, of which *C. prolifera*, Borry, is the type. Presl is quite mistaken at p. 92 of his Epimelia Botanica, in stating that Mr. J. Smith's *Callipteris* (or Oxygonium) *ovata*, is not the *Asplenium ovatum* of Wallich. The simple fronded state of the plant is identical with that, as is *Diplazium cordifolium* of Blume, which name, as the oldest published, we adopt. Some of our simple fronded specimens are nearly a foot long.

Fig. 1. Portion of the underside of a fertile pinna:—*magnified.*

Tab 36.



Fitch del. et lith.

Pamplin exc.

TAB. XXXVII

ASPLENIUM (Asplenidictyon) FINLAYSONIANUM, *Wall.*

Frondibus subcoriaceis opacis oblongis pinnatis, pinnis 5-7 remotis oblique patentibus ovato-lanceolatis longe acuminatis subintegerrimis margine superiore infra medium productis angulatis vel acute auriculatis basi cuneatis in petiolum brevem attenuatis, terminali subrhombea sæpe triloba lobis inæqualibus, venis marginem versus anastomosantibus apiceque arcu conjunctis, stipite rachique compressis deciduo-subpaleaceis, caudice crasso squamoso fibroso.

Asplenium Finlaysonianum, *Wall. Cat. n.* 2682.

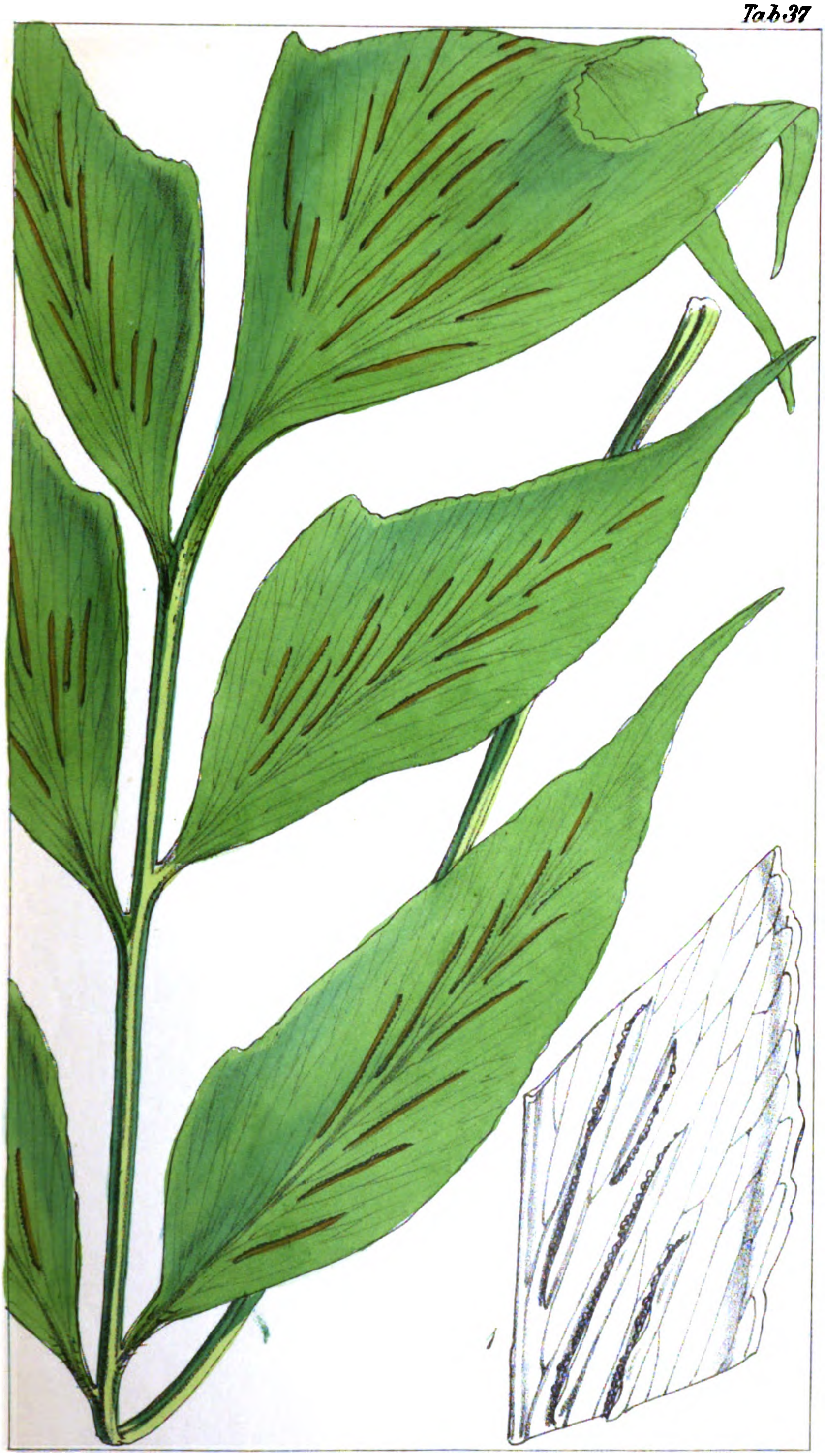
Asplenium integerrimum, *Wall. in Hook. et Grev. Ic. Fil. t.* 136, (*inaccurate in the venation*).

HAB. Nepal and Kamaoun, *Wallich.* Mishmee, *Griffith.* Gowhatty, Assam, *Simons.*

Our figure of the venation of the present East Indian Fern, in Icones Filicum, is inaccurate, and it is a plant that deserves to be better illustrated; the more so as our next plate will represent a Fern with very similar habit, and exactly similar venation, from the West Indies. Of the two Mr. J. Smith proposes to constitute a genus "*Asplenidictyon.*" Trusting, probabably, to the figure in the Icones Filicum, Presl has placed *Aspl. Finlaysonium* in his group of *Asplenium*, "Venis venulisque apice liberis." In the "venulæ apice arcu transverso conjunctæ," our plant approaches Presl's *Thamnopteris* section of *Asplenium;* but, more than this, the veins anastomose, more or less, below the apices, as in *Oxygonium*, where however the involucres are *diplazoid.* It borders too upon *Hemidictyon*; differing in wanting the marginal vein which unites the lateral veins in *Asplenium* (Hemidictyon) *marginatum. Allantodia Brunonis,* Wall., again, has the venation anastomosing, like our species under consideration, but the ultimate veinlets are all free and clavate within the margin. Such a structure in the venation affords beautiful sectional characters, but does not necessarily afford sound generic distinctions.

Fig. 1. Portion of a fertile pinna, seen from beneath:—*magnified.*

Tab. 37



Fitch del et lith.

[illegible] imp.

TAB. XXXVIII.

ASPLENIUM (Hemidictyon) PURDIEANUM, *Hook.*

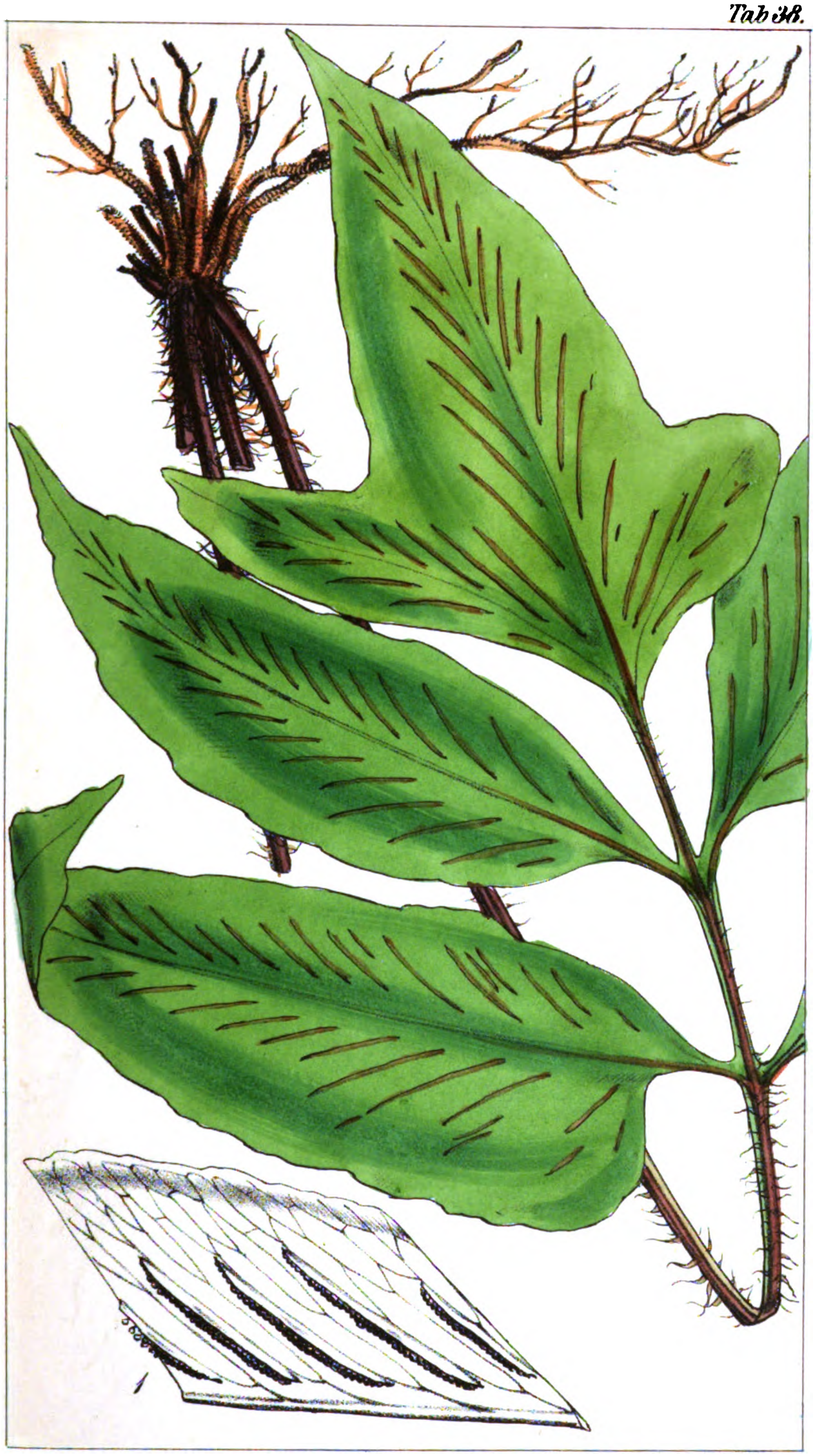
Frondibus subcoriaceis opacis cordato-rotundatis pinnatis, pinnis 5-7 patentibus submembranaceis lateralibus oppositis subsessilibus ovato-lanceolatis breviter acuminatis basi oblique cuneatis deorsum obtuse productis obtusangulis (seu pinnis inæquilateris), terminali subrhombeo-ovata acuminata æquilatera nunc subhastata lobis inæqualibus, venis marginem versus anastomosantibus, stipite rachique compressis subulatis fusco-paleaceis, radice fibrosa.

HAB. Moist woods, La Fundacion, Jamaica, *Purdie.*

This appears to be an entirely undescribed Fern of peculiar habit, having the fructification of an *Asplenium* (verum) and the venation of *Hemidictyon,* except that it wants the marginal vein which unites the terminal veinlets in the latter genus. This will consequently rank with the *Asplenium Finlaysonianum,* represented on our preceding plate; differing however in the shorter broader frond, the paleaceo-setose stipes and rachis, the less acuminated pinnæ, which have the lowest half the broadest and most disposed to form an angle or auricle, (not the upper one). The root here too is simply fibrous, not forming a knob-like caudex.

Fig. 1. Portion of a fertile pinna:—*magnified.*

Tab 38.



Fitch del et lith. [illegible]

TAB. XXXIX-XL.

DIPLAZIUM (Oxygonium) ELEGANS.

Frondibus simplicibus v. pinnatis, pinnis lato-lanceolatis sessilibus anguste acuminatis serratis, lateralibus 2-9 suboppositis intermedia vix majore nunc basi hastato-biloba, involucris plurimis elongatis angustis, venis hic illic plerumque marginem versus anastomosantibus, stipitibus glabris nudis basi solummodo parce squamosis.

Oxygonium elegans, *J. Smith, in Hook. Journ. of Bot.* 4. *p.* 178. (*name only*).

Callipteris elegans, *in Hook. Journ. Bot.* 3. *p.* 409. *Fée. Gen. Fil. p.* 219.

Anisogonium elegans, *Presl, Epimel. Bot. p.* 293.

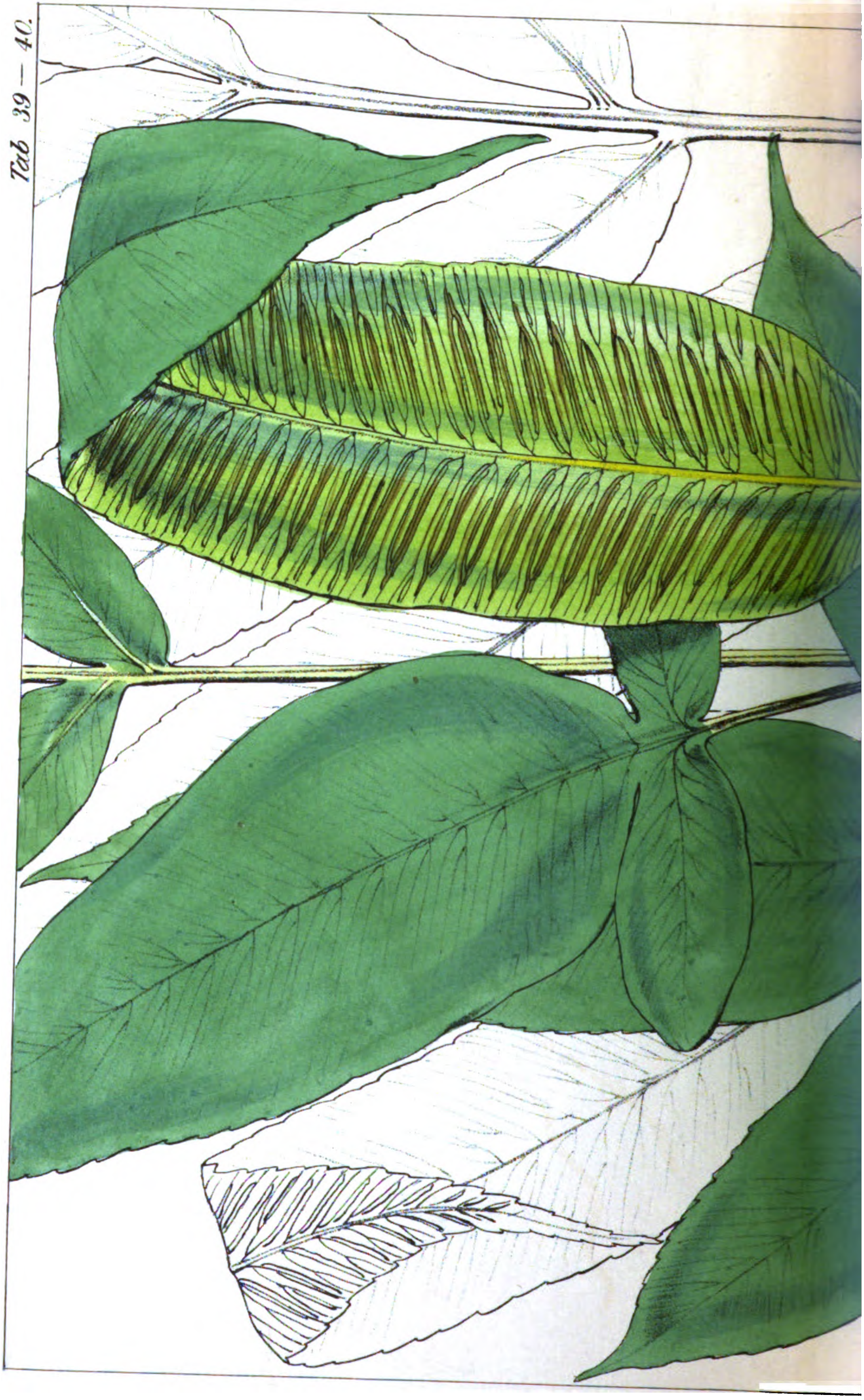
A. grossum, *Presl, Epimel. Bot. p.* 293. forma grandis, (*name only, sub* A. elegante).

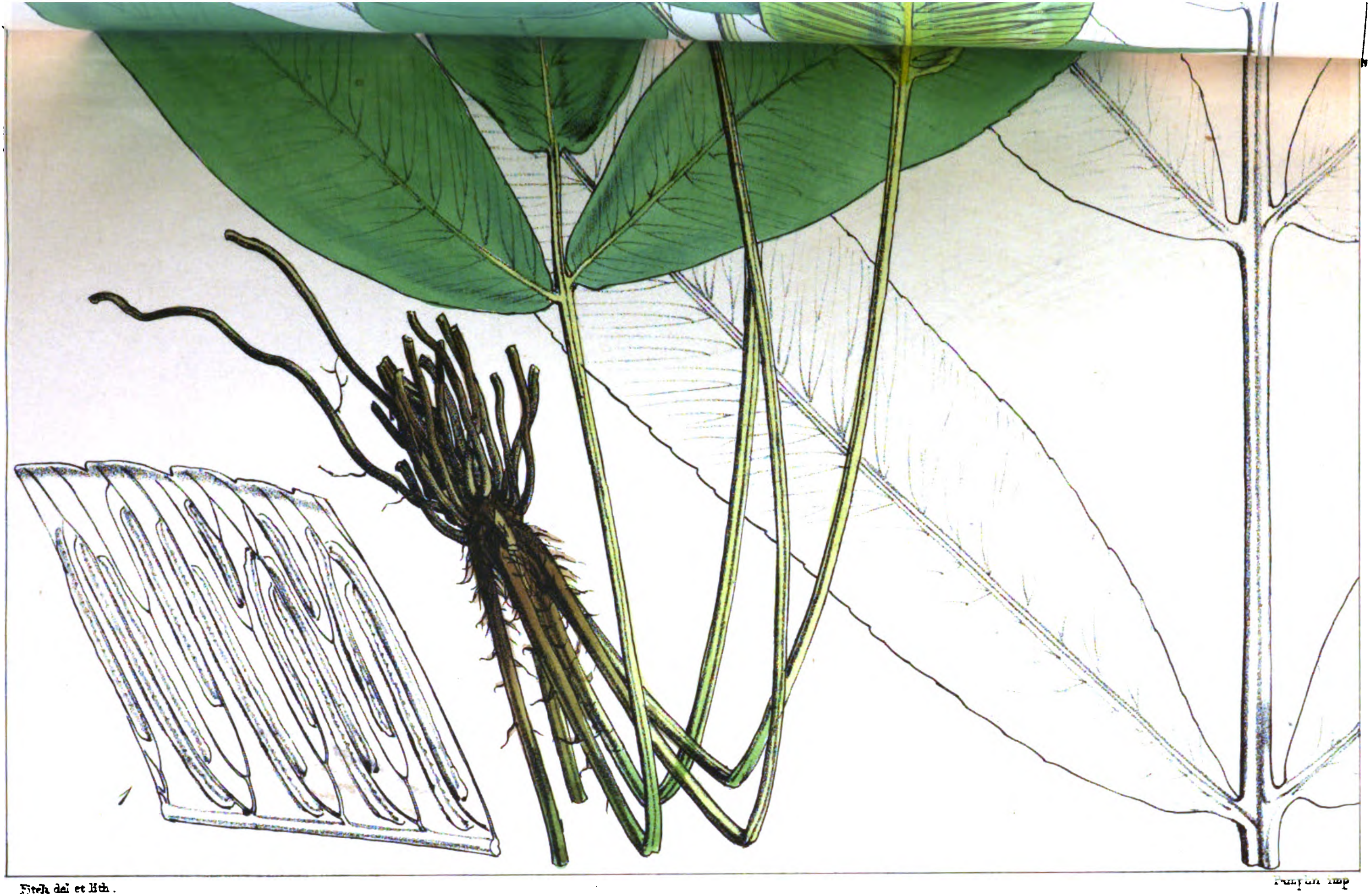
HAB. Luzon, *Cuming, n.* 276, and at Leyte. *n.* 305. (larger form.)

I cannot but think that Mr. John Smith is correct in removing this to *Oxygonium* of Presl, rather than retaining it in *Callipteris* as M. Fée has done, though it has a stronger claim to a place there than our *Diplazium cordifolium* has; yet the venation of the present plant is not that of *Callipteris prolifera*, the original species, where all the lateral veinlets of a fascicle combine with the adjacent ones, and form as it were a secondary vein, parallel with the main vein. Here the union of the long parallel veinlets is comparatively rare, as shown in our figure 1. It is unquestionably a Fern closely allied to our *Diplazium cordifolium*, (see Tab. 36), and even more liable to vary, from a simple entire frond to pinnated with seven or eight pinnæ; but these pinnæ are always serrated, narrower, and the ultimate pinna nearly uniform with the others, and the venation is more simple. Our large state of the plant Mr. Presl seems to have made a distinct species, (under the name of *grossum*), but we find all intermediate gradations in our own or Mr. Smith's Herbarium. Nearly allied to the large state of this is the pinnated form of *Diplazium alismæfolium*, Presl, of which the simple fronded form is figured in the Reliq. Hænk. t. 8. f. 3. (*Cuming. n.* 116); but that has larger dark coloured fronds, with copious, coarse, black scales on the stipites and rachis, and venation as in our *Dipl. cordifolium*. Of this, however, Presl has made the Genus *Ochlogramma* (Epimel. Bot. p. 93), and Fée the Genus *Pteriglyphis*, Fée, Gen. Fil. p. 219. t. 18. B.:—each author giving a new and different specific name.

Fig. 1. Portion of a fertile pinna, seen from beneath:—*magnified.*

Tab 39 — 40.





Fitch del et lith.

Ruffyn imp.

TAB. XLI.

POLYPODIUM SETIGERUM, *Bl.*

Frondibus fasciculatis longe sitipitatis lineari-lanceolatis siccitate membranaceis subpellucidis, stipite ferrugineo-setosis, soris orbicularibus costam approximatis utrinque uniserialibus, venula infima superiore medio sorifera, radice cæspitosa.

Polypodium setigerum, *Blume, En. Fil. Jav. p.* 123.

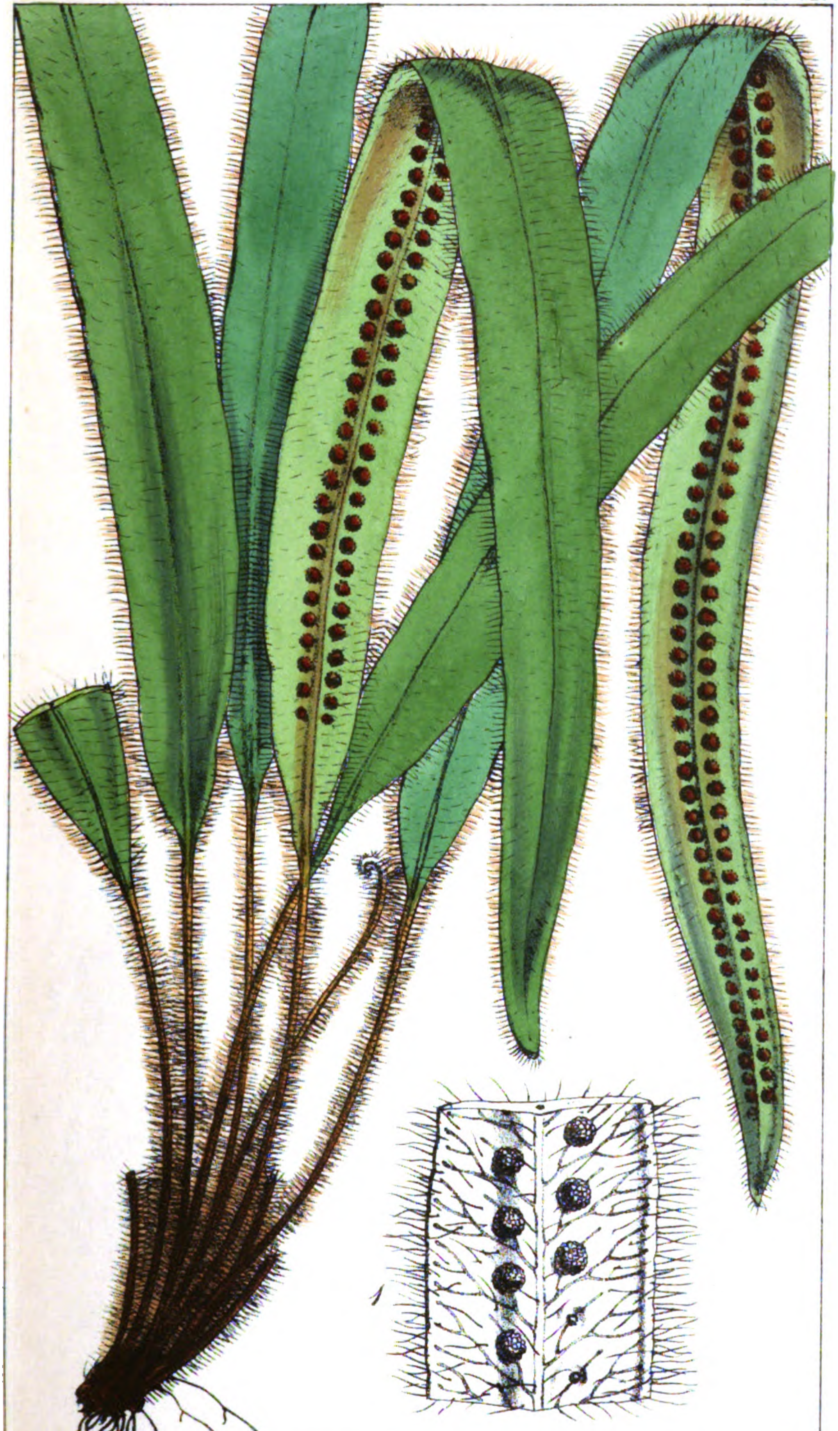
Grammitis fasciculata, *Blume, Fl. Jav., Fil. p.* 112. *t.* 47. *f.* 2.

HAB. Epiphytal, on the trunks and branches of trees, summit of Mount Gede, Java, *Blume, Thos. Lobb.*

This is a very beautiful species, with an aureo-fuscous tint, increased by the deeper golden brown of the copious patent setæ. Blume first referred it to *Polypodium,* and we think rightly, and afterwards removed it to *Grammitis,* and he both figures and describes the *sori* as "*rotundi.*" Our specimens from Mr. Lobb precisely accord with one from Blume himself in our Herbarium. Thin and membraneous as the texture appears when dry, it becomes thick and somewhat pulpy when soaked. Held between the eye and the light the frond, when magnified, is seen to be full of pellucid points or minute areoles.

Fig. 1. Portion of a fertile frond, seen from beneath—*magnified.*

Tab 41.



Fitch del et lith.

Pamplin imp.

TAB. XLII.

POLYPODIUM LEUCOSORUM, *Boj.*

Frondibus pendulis lanceolatis subcoriaceis acuminatis (acumine subintegro) profunde pinnatifidis glabris subtus flavo-fuscis opacis, lobis oblongis e lata basi sensim attenuatis obtusis integerrimis vel leviter sinnato-crenatis, soris biserialibus in singula lacinia inter costam et marginem junioribus pulverulento-albis, venis internis, venulis primariis superioribus apice soriferis, stipite glaberrimo nudo gracili fronde multoties breviore, caudice crasso setaceo-paleaceo.

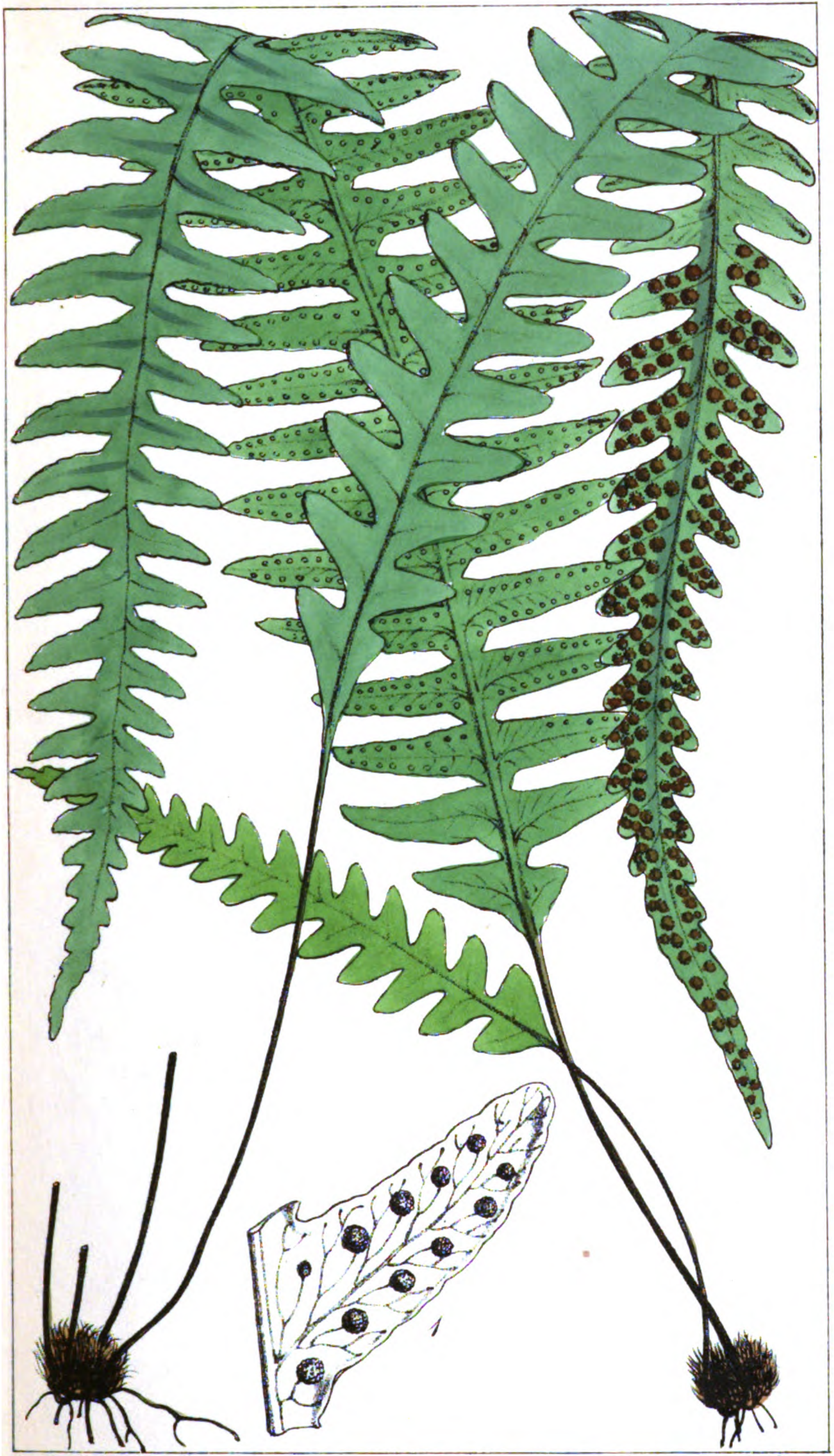
Polypodium leucosorum, *Bojer, Hort. Maurit. p.* 417. (*name only.*)

HAB. Old mossy trees, forests of Nouvelle Decouverte and Grand Port, Mauritius, *Bouton*. Bourbon, *Carmichael.*

I possess a specimen of this plant from Mauritius, sent by Mr. Bouton, with young fructification, exactly as he observes, "couverte d'une poussiere blanche," and another from Bourbon, gathered by the late Capt. Carmichael. M. Bouton justly notices its affinity with *Polypodium rigescens* of Bory, figured at *Tab.* 216 of Hook. and Greville's Icones Filicum. Its very much larger size, different colour, differently shaped lobes, and segments, and, especially, the young *white* sori, are sufficiently characteristic of the present, as a species. A comparison of the figures of the respective species will satisfy any unprejudiced mind of the differences between the two.

Fig. 1. Lobe of a fertile frond, seen from beneath:—*magnified.*

Tab 42.



Fitch del et lith.

Pamplin imp.

TAB. XLIII.

POLYPODIUM LEUCOSORUM, *Boj.*

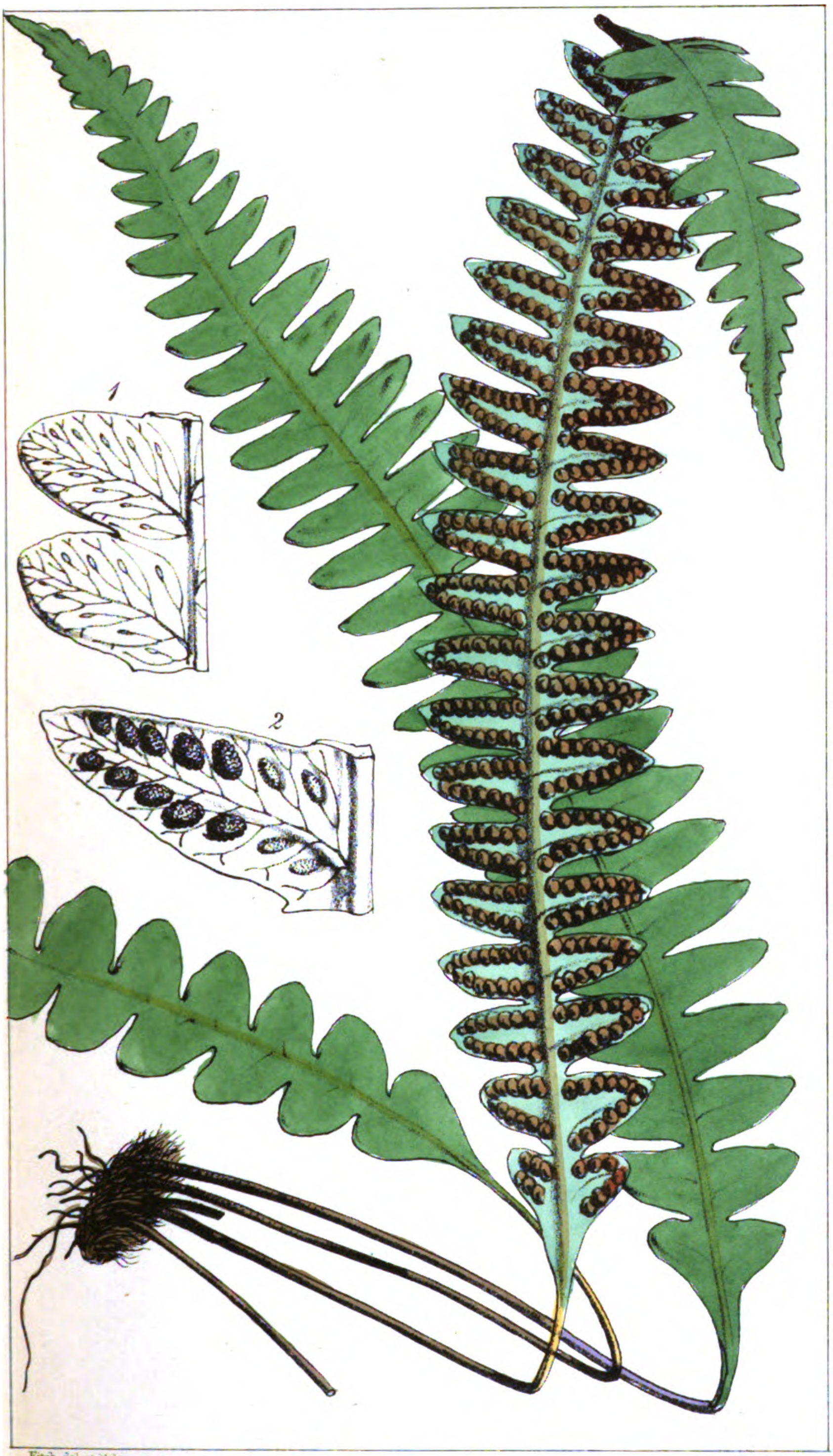
(status senilis)

See description under Tab. 42.

HAB. Isle of Bourbon, "Polypodium, No. 3, from the Museum de l'Histoire Naturelle."

The entire absence of white sori, the very copious fructifications, and the usually broader and more obtuse segments of the frond misled me as to the identity of the species of this Fern; and it is only since the lithograph was executed and all the impressions worked off, that I have satisfied myself it is the old state of *Polypodium leucosorum*, every segment loaded with brown sori. Some of our specimens, too, prove that the sori vary to elliptical as shown at *fig.* 2. and the receptacles of the capsules are probably invariably oblong as shown at *fig.* 1.

Fig. 1. Segment of a fertile frond, from which the sori are removed. *f.* 2. fertile segment seen from beneath, with the sori more elliptical than usual:—*magnified.*



Fitch del et lith.

Paraplin imp

TAB. XLIV.

Polypodium (Ctenopteris) pellucidum, *Kaulf.*

Glabrum subcoriaceum, frondibus ovatis oblongisve profunde pinnatifidis, laciniis valde approximatis patentibus oblongis crenato-dentatis vel serratis vel erecto-patentibus remotis marginatis pinnatifidis, soris copiosis rotundatis v. ovalibus sæpe confluentibus, venis dichotomis striisque interstitialibus pellucidis, stipite rachique validis fuscis nitidis, caudice crasso repente squamoso.

α. fronde lata laciniis acutiusculis serratis.

Polypodium pellucidum, *Kaulf. En. Fil. p.* 101. *Gaudichaud, in Freyc. Voy. p.* 356. *Hook, et Arn in Bot. of Beech. Voy. p.* 103. (TAB. NOSTR. *larger figure*).

β. fronde augustiore coriacea, venis vix pellucidis, laciniis numerosis approximatis erecto-patentibus obtusis crenato-serratis.

γ. fronde elliptica, laciniis valde approximatis obtusissimis obscure crenatis. (TAB. NOSTR. *smaller figure.*)

δ. fronde elongata bipinnatifida, laciniis primariis remotis.

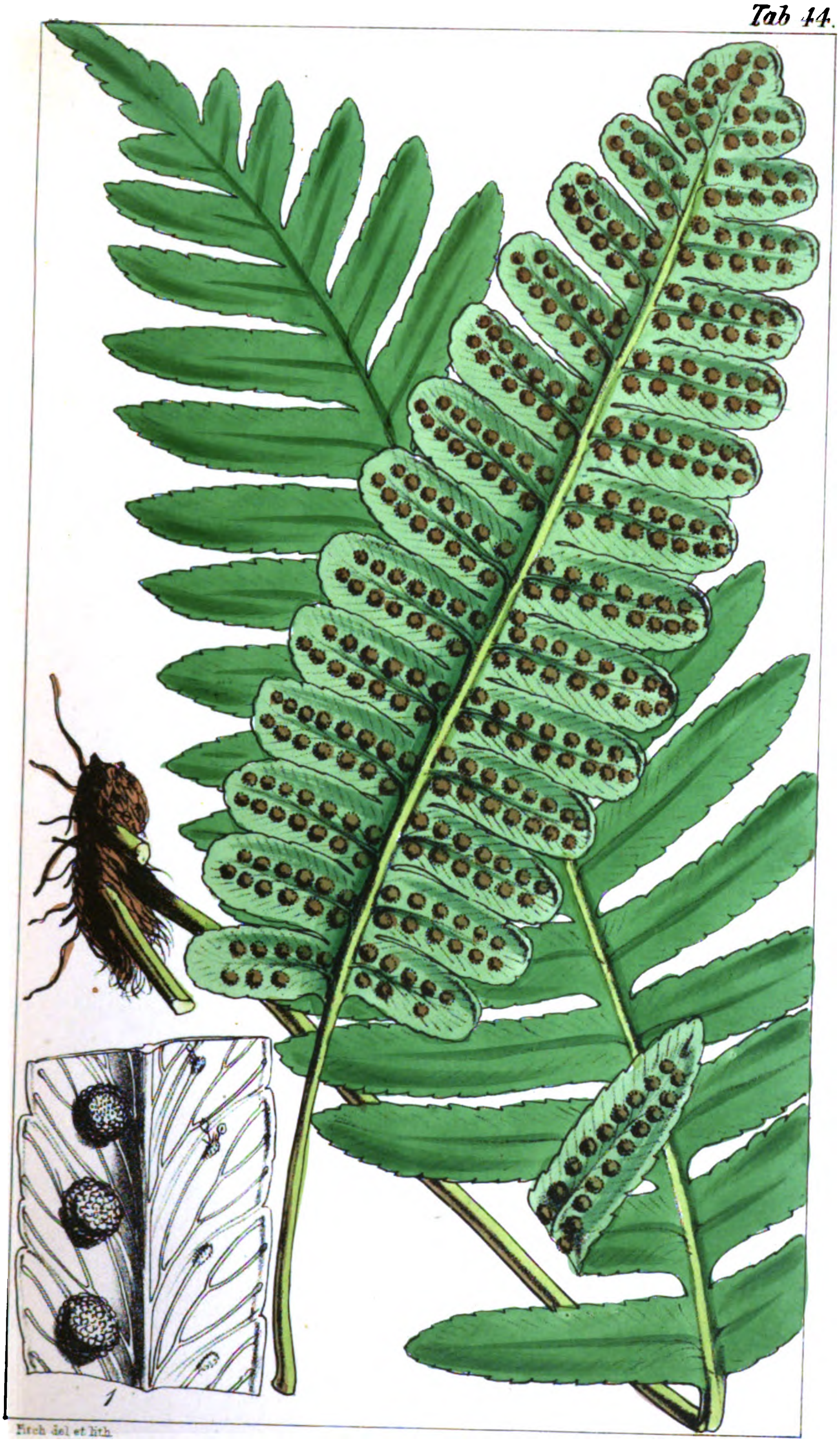
Polypodium myriocarpum, *Hook. Ic. Fil. t.* 84. (*See also the next plate, t.* 45.)

HAB. Oahu, Sandwich Islands, *Chamisso, Douglas, Beechey, Dr. Diell.*

Without a coloured figure of a magnified portion of this Fern it would be difficult to give an idea of the peculiar venation of the plant. The frond is opaque, but the veins are pellucid and of a rich tawny colour, when seen between the eye and the light; and besides the free (clavate at the extremity) veinlets, of which the upper one bears the sorus, there is, what I here call, an intestitial pellucid stria always communicating with a crenature or sinus between the teeth of the margin, usually the most conspicuous of the pellucid lines. I am satisfied that the above mentioned varieties belong to one and the same species, and that they pass the one into the other.

Tab. 44 exhibits vars. and (the larger specimen) *γ*. *nat. size.*—*Fig.* 1. Portion of the underside of a fertile lobe seen from beneath :—*magnified.*

Tab 44.



Fitch del et lith.

Pamplin imp.

TAB. XLV.

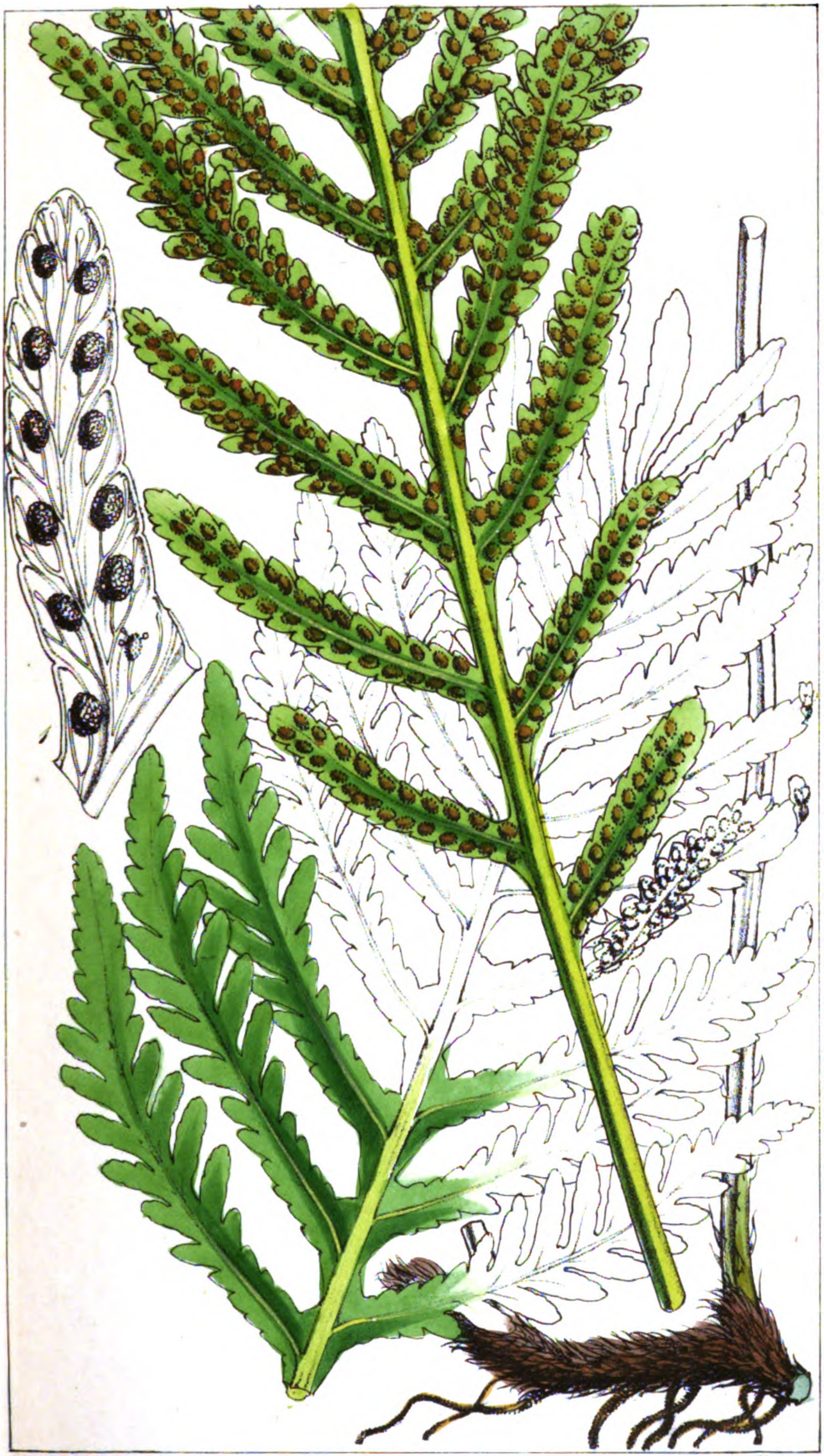
POLYPODIUM (Ctenopteris) PELLUCIDUM, *Kaulf.*

Var. bipinnatifidum.

We have noticed this plant under the description of the preceding Plate (*Tab.* 44), and have there inserted the synonym of our *Pol. myriocarpum*, *Tab.* 84 of Icones Plantarum. Our representation is now accompanied by a magnified figure, showing the character of the venation, and proving that it is of the same nature as that of the true *P. pellucidum.* It is, indeed, an exceedingly variable species: but our Herbarium exhibits specimens which clearly show the passage from one to the other, and the present can only be considered a bipinnatifid variety of that species. All the varieties appear to be found in the same island, Oahu—but they are probably by no means confined to it.

Fig. 1. Fertile lobe, seen from beneath, showing the venation and the clavate tips to the veinlets :—*magnified.*

Tab 45.



Fitch del. et lith.

Pamplin imp.

TAB. XLVI.

Polypodium papillosum, *Bl.*

Elatum glaberrimum, frondibus membranaceis elongato-oblongis acuminatis profunde fere ad rachin pectinato-pinnatifidis, lobis lineari-oblongis obtusis horizontaliter patentibus apicibus solummodo serratis, venis unifurcatis, soris uniserialibus inter costam et marginem profunde immersis, stipite rachique valida nitidissimis fuscis, caudice elongato repente nudo.

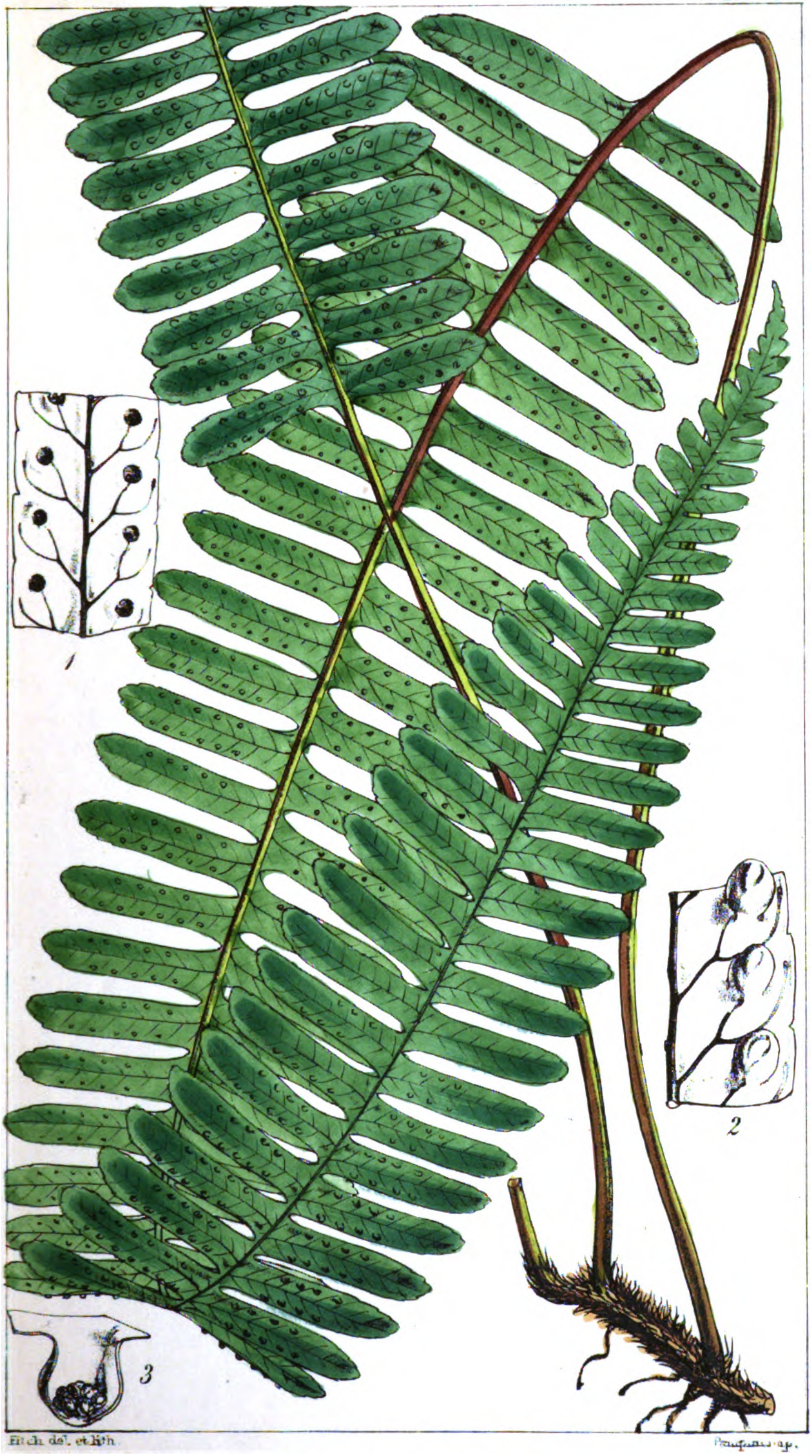
Polypodium papillosum, *Bl. En. Fil. Jav. p.* 131. *J. Sm. En. Fil. Philip. in Hook. Journ. of Bot. p.* 394. *Br. in Horsf. Plant. Jav. Rar. t.* 2.

Hab. Mountain woods, on trees, Java, *Blume, Horsfield, Thos. Lobb.* South Camarines, Philippine Isles, *Cuming*, n. 185.

Blume compares this remarkable species with *P. vulgare*: but in form and texture it is widely different. Its sori, too, are sunk into a deep pouch or bag, forming so many prominent papillæ on the upper side of the frond, the mouth of which is contracted. Blume notices a var. "B. frondibus brevioribus et laciniis acutiusculis."

Fig. 1. Portions of a fertile lobe, seen from beneath. *f.* 2. lesser portion of the same seen from above. *f.* 3. Soriferous sack, cut through vertically :—*magnified.*

Tab 46



Fitch del. et lith.

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TAB. XLVII.

POLYPODIUM FARINOSUM, *Hook.*

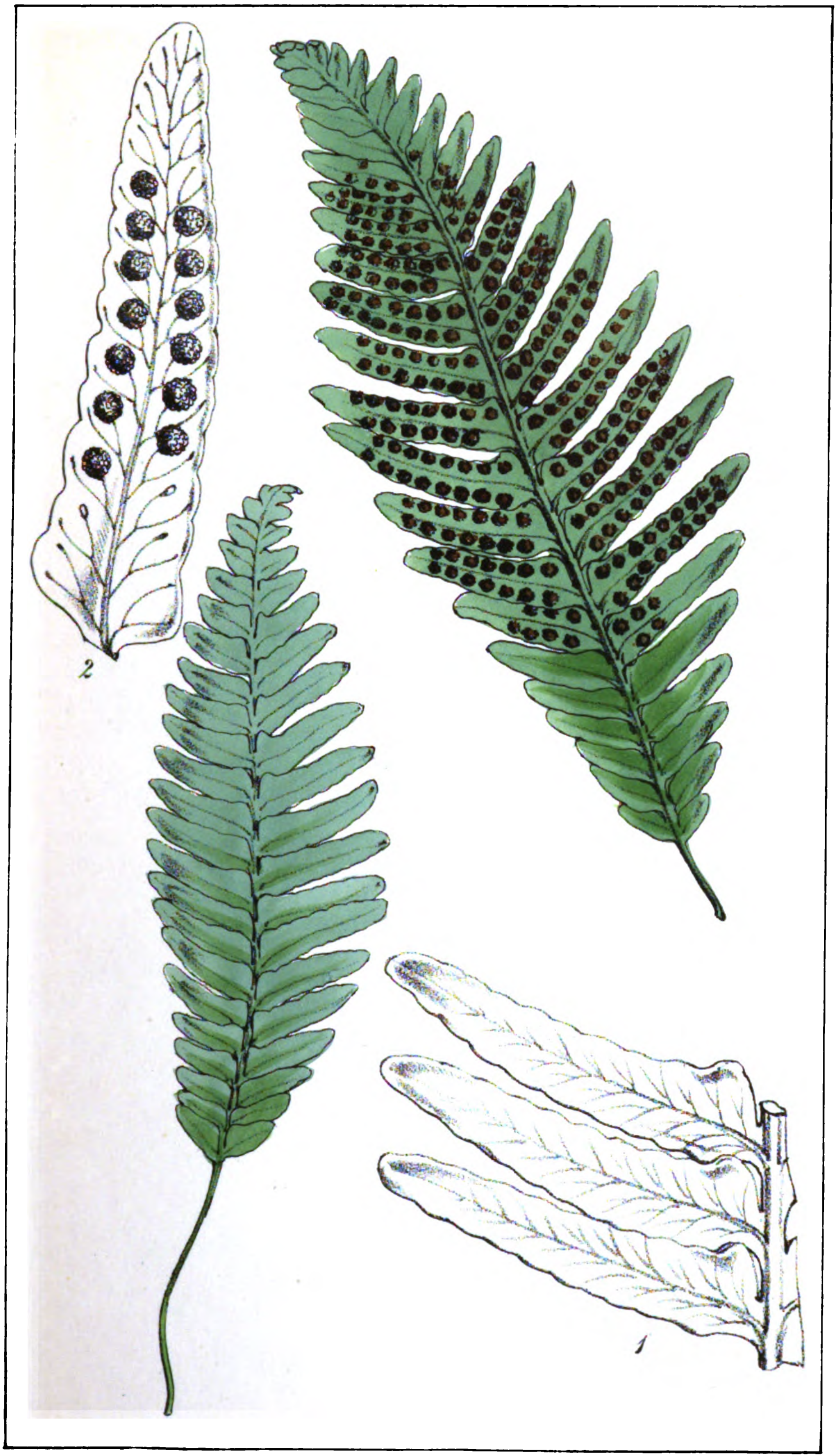
Parvum submembraneceum fronde elliptico-lanceolata pinnata utrinque pulveraceo-farinosa albida, pinnis approximatis lineari-oblongis patentibus sessilibus subdecurrentibus obtusis sinuato-crenatis basi sursum obtuse auriculatis, venis unifurcatis apice clavatis, venula superiore apice sorifera, soris medio intra costam et marginem uniseriatis magnis aureis, stipite gracili brevi nudo.

HAB. On the trunk of an old tree at the eastern ascent of the Cordillera of Quito, where the forests commence; rare, and very few specimens were gathered, *Prof. W. Jameson.*

Independent of the white pulverulent or subfarinaceous substance, which invests both sides of the half dozen specimens in my possession of this rare Fern, and which has the appearance of being quite natural, not adventitious, there is a something in the general outline or shape, and in the form of the pinnæ, which, taken in conjunction with the simply furcate veins and the large orange-coloured sori, renders this Fern unlike any species with which I am acquainted. The pinnæ are very compact, or closely placed; the base of each is very unequal, the upper base broad and dilated into a lobe or obtuse auricle, while the lower is narrow, yet decurrent; so as, in the upper half at least, to form rather a frond pinnatifid to the very base than a truly and entirely pinnated one. I have seen no specimen, nor any species like the present from any Botanist save Professor Jameson.

Fig.* 1. Three pinnæ, upper surface. *f.* 2. Fertile pinna, seen from beneath: —*magnified.

Tab 47.



Fitch del et lith.

Pamplin imp

TAB. XLVIII.

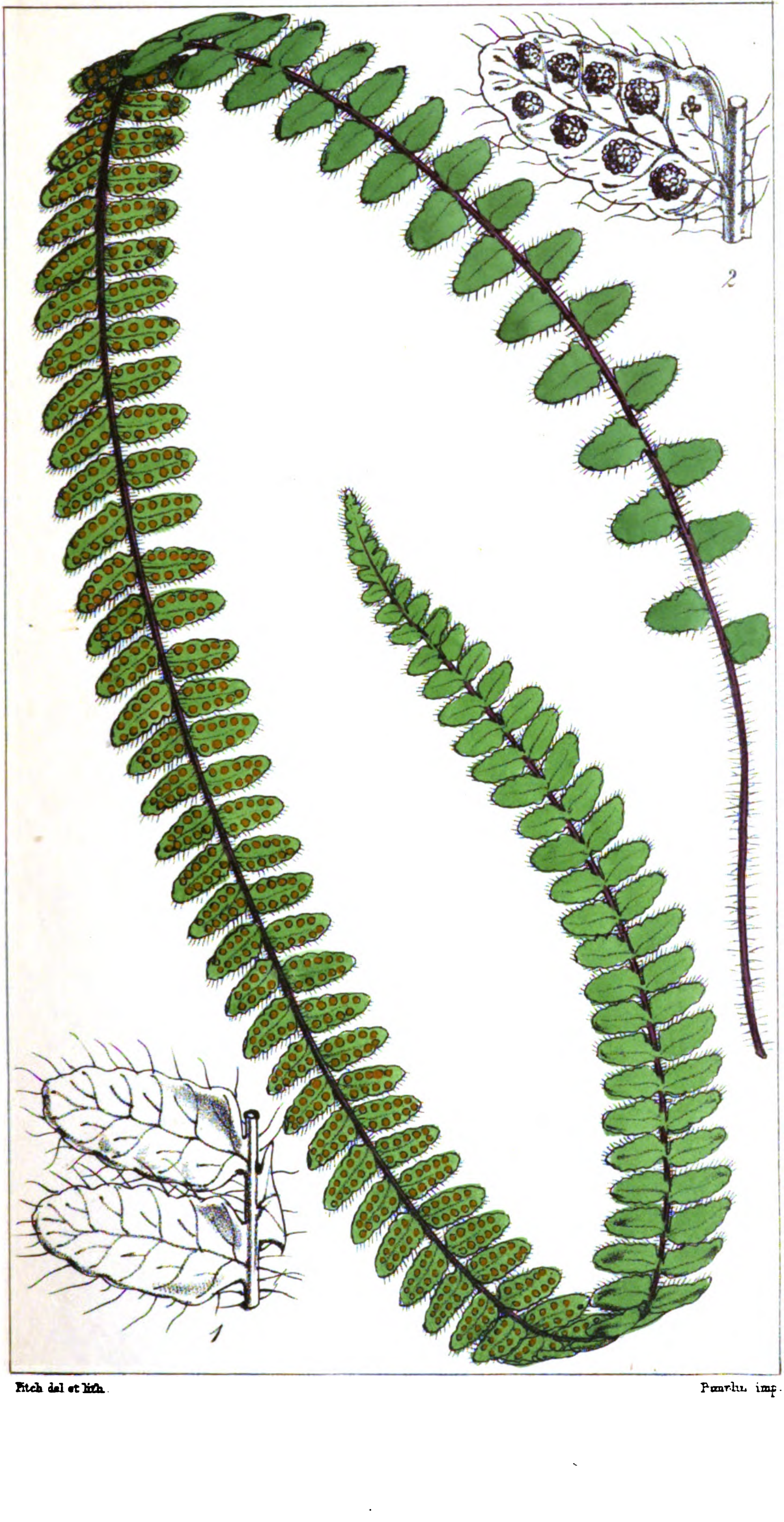
POLYPODIUM SEMIADNATUM, *Hook.*

Frondibus linearibus acuminatis longissimis petiolatis pinnatis, pinnis approximatis rigido-membranaceis suboblique ovatis obtusis crenato-lobatis basi superiore subauriculatis longe ciliatis basi costæ adnatis, subtus petiolo gracili epaleaceo rachique filiformibus nigris patenti-hirsutis, venulis furcatis, venula superiore apice sorifera.

HAB. On trunks of trees, Pilzhum, 12,000 of elevation on the Quitinian Andes, *Prof. Jameson.*

When Ferns are pinnated there is commonly a contraction or constriction as far as the midrib, which even in a sessile pinna is usually the only point of attachment to the rachis, unless in the cases where the pinnæ are decurrent. Here, on the other hand, the pinnæ are not decurrent, yet is there a considerable portion of the base of the pinnæ both above and below the midrib *adnate* with the rachis: in no portion of the very elongated frond are the pinnæ confluent or decurrent, Our specimens are a foot, and a foot and a half long, the stipes is from two to four inches long.

Fig. 1. Pinnæ, seen from above. *f.* 2. Fertile pinnæ seen from beneath :—*magnified.*



Fitch del et lith.

Reeve imp.

TAB. XLIX.

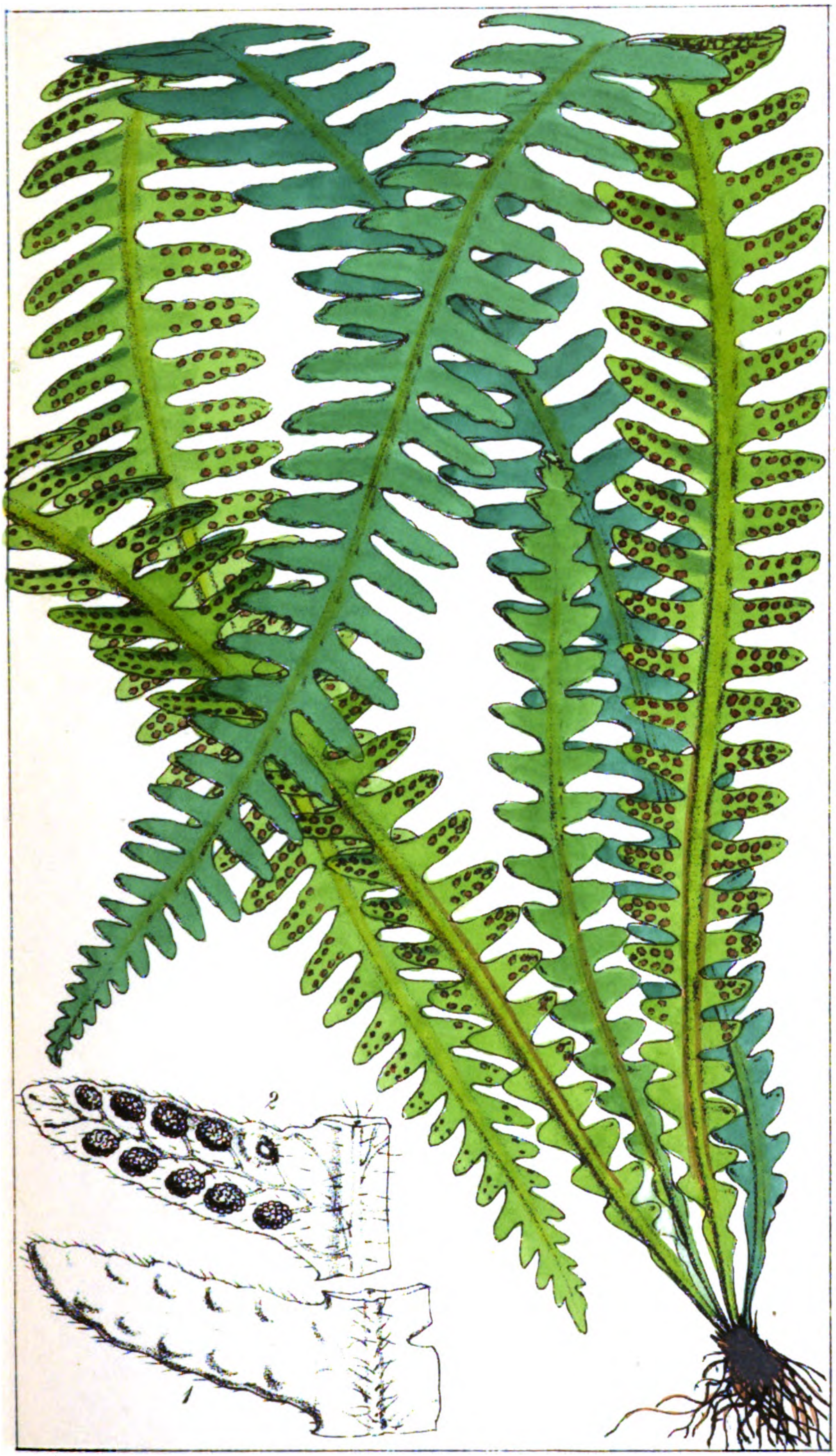
POLYPODIUM (Ctenopteris) KHASYANUM, *Hook.*

Pendulum, frondibus cæspitosis subcoriaceo-membranaceis elongatis lineari-lanceolatis acuminatis basi attenuatis profunde pinnatifidis, lobis oblongis acutiusculis subsinuato-crenatis ciliatis rachi paginaque subtus hispido-hirsutis, venis simplicibus apice marginem versus soriferis, soris subelliptico-rotundatis immersis, stipite brevissimo subnullo, radice fibroso-cæspitosa.

HAB. On trees, Khasya, *Drs. Hooker and Thomson.*

Fronds a foot to a foot and a half or more long, nearly sessile, for the leafy lobed portion extends nearly to the root. The breadth in the widest part is two inches, tapering towards the base and towards the point. The margin and the surface and rachis beneath (the latter sometimes above) are hairy, and ciliated. The sori, occupying the apex of a single and simple vein, is always sunk in a depression, which depression occasions a roundish swelling or tubercle on the opposite side, only, however, slightly prominent, and very unlike the sack or bag represented in our *Polypodium papillosum*, *Tab.* 46.

Fig. 1. Fertile segment of a frond, seen from above. *f.* 2. the same, seen from beneath:—*magnified*



Fitch del et lith.

Pamplin imp.

TAB. L.

GYMOGRAMME (§Syneuron *J. Sm.*) ASPIDIOIDES, *Hook.*

Frondibus ovato-lanceolatis acuminatis pinnatis utrinque (venis præcipue) stipite rachique hirsutis, pinnis submembranaceis oblongis acuminatis lobato-pinnatifidis basi truncatis summis confluentibus, lobis acutis, venulis pluribus inferioribus cum oppositis inferioribus conjunctis, et in laciniarum sinu excurrentibus, soris linearibus totas fere venulas tegentibus, capsulis hispidis.

Gymogramme Stegnogramme, *Blume, Ic. Fil. Jav. p.* 98. *t.* 44.

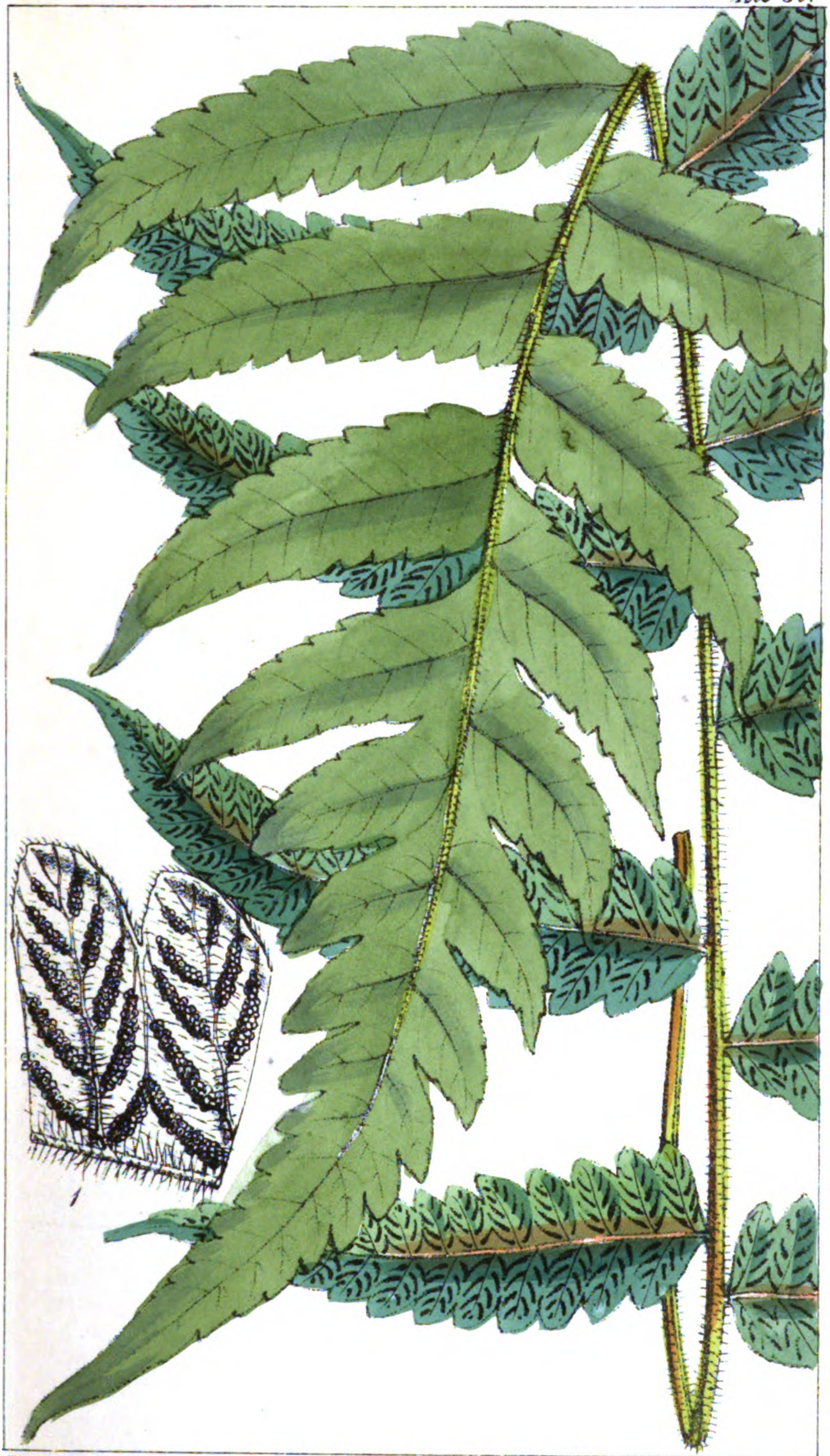
Stegnogramme aspidioides, *Bl. En. Fil. Jav. p.* 172. *Presl, Tent. Pterid. p.* 210. *Tab.* 9. *f.* 5. *(fragm.) Fée, Gen. Fil. p.* 204. *(not Gymnogramme aspidioides, Bl. Fil. Jav. which is G. Totta.)*

HAB. Banks of rivers, Java, elev. 3000 to 4000 feet above the sea-level. *Blume (in Herb. nostr.), Thos. Lobb.* Eastern Bengal, Khasya, *Griffith, Drs. Hooker* and *Thomson*, Mumbree, *Griffith.*

Small specimens of this Fern so closely resemble the *Gymnogramme Totta*, Schlecht., a native also of Java, that it would be difficult to point out any well-marked distinction, save *that*, which, in the opinion of many would form a generic difference, namely, the union of several pairs of veinlets which, from the union of the lowermost pair, run up, forming, as it were, an intermediate vein, extending to the very sinus of the lobes. It therefore, differs from *Gymnogramme*, as *Nephrodium* does from *Lastrea*, and as *Goniopteris* does from *Polypodium.* Of this plant indeed, Blume had formed the Genus *Stegnogramme*, so called from the supposed existence of an involucre. He afterwards on discovering his error, referred the plant to *Gymnogramme*, retaining the specific name *Stegnogramme*, which is as inapplicable to the species as to the genus. M. Fée maintains the presence of the involucre, and unites with it *Mesochlæna* of Mr. Brown, which had a most remarkable involucre.

Fig. 1. Portion of a fertile pinnæ, seen from beneath:—*magnified.*

Tab 50.



Fitch del et lith

Pamplin imp

TAB. LI.

POLYPODIUM (Drynaria) GRIFFITHIANUM, *Hook.*

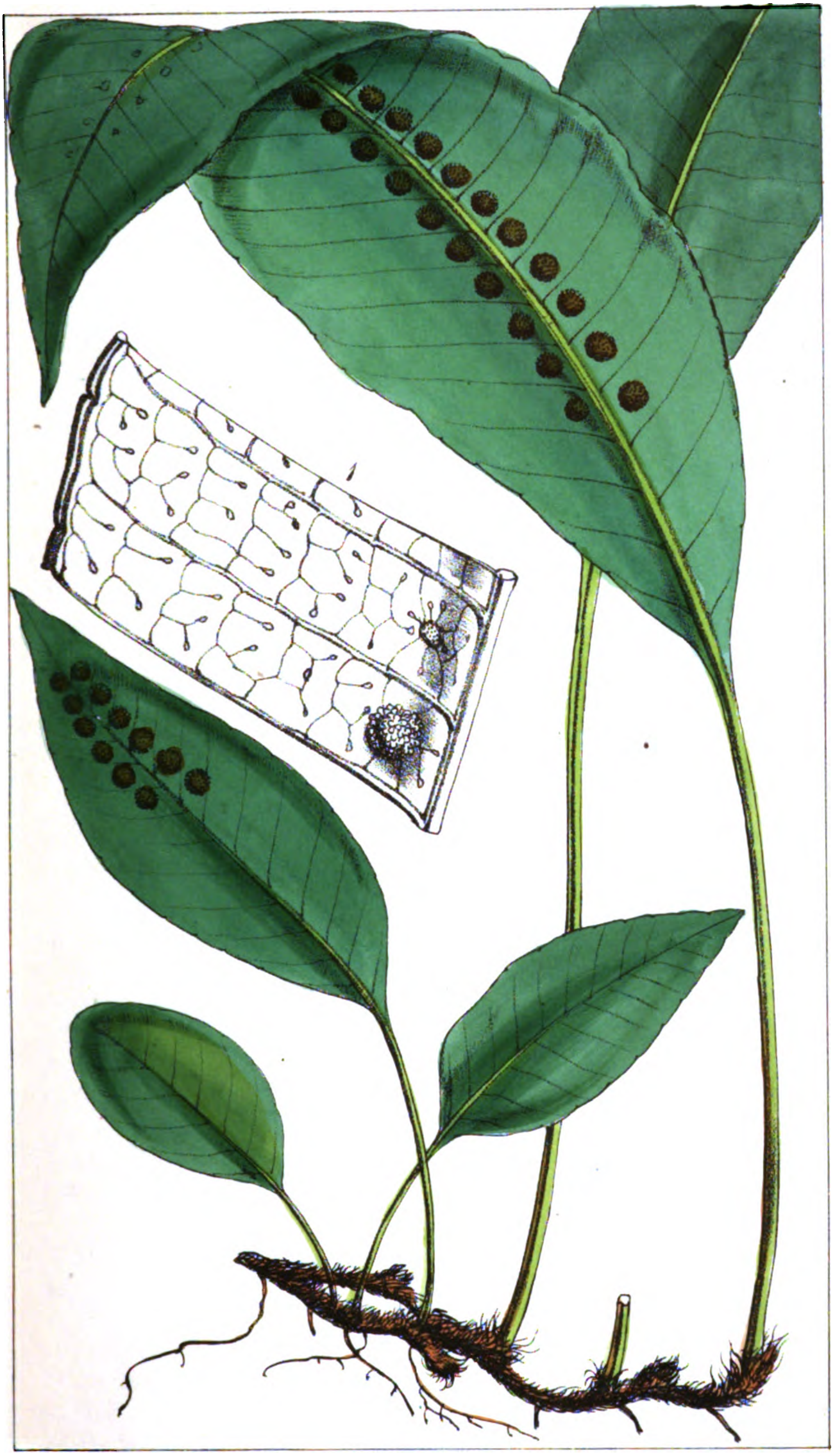
Fronde simplici chartacea oblongo-seu-ovato-lanceolata integerrima vel obsoletissime sinuato-crenata glabra margine incrassata, soris maximis prope costam utrinque uniseriatis, venularum areolis subtetragonis, venulis ultimis (in areolis) liberis simplicibus vel furcatis omnibus ad costam spectantibus, stipitibus glabris nudis flavo-fuscis frondem æquantibus, caudice longe repente ramoso squamoso, frondibus subtus præcipue glaucis.

HAB. On trees, Boutan and Mishmee, *Griffith*.-β. *glauca*. Khasya, *Griffith*, *Mrs. Mack*, *Drs. Hooker* and *Thomson*.

In size, general outline and habit, and in colour of var. β. this present Fern is very closely allied to *Polypodium glaucophyllum*, Kze. in Schk. Fil. 1. TAB. 93, from the West Indies and S. America: but the sori are there irregularly scattered over the frond, and the venation is totally different: viz. that of *Goniophlebium*. The primary venation is here sufficiently conspicuous, but though the frond is tolerably pellucid, when held between the eye and the light, the veins are to be traced only here and there, with great difficulty, and only in the older specimens: they are quite obsolete in the younger plants. From all that can be traced the venation is as represented at our *Fig.* 1:—that is, the midrib of the frond is pinnated, the pinnæ or primary veins run nearly to the edge, but are there combined with a continuous intramarginal veinlet. These are united by transverse veinlets, forming sub-oblong square areolæ, and are sometimes again connected by cross veinlets. Within the areolæ the ultimate, free, simple or forked, and always clubbed veinlets, 2-3 in number, proceed from the side of the cross veinlet (next the costa) and are all directed towards the midrib. The lower cross veinlets next the rachis meet in the centre, together with the ultimate veinlets of the areolæ, and form the receptacle bearing the sorus.

Fig. 1. Portion of a fertile frond:—*magnified.*—(N.B. The venation is represented more distinct than it can be seen in the plant.)

Tab 51.



Fitch del et lith

[illegible]

TAB. LII.

POLYPODIUM (Marginaria) LACHNOPUS, *Wall.*

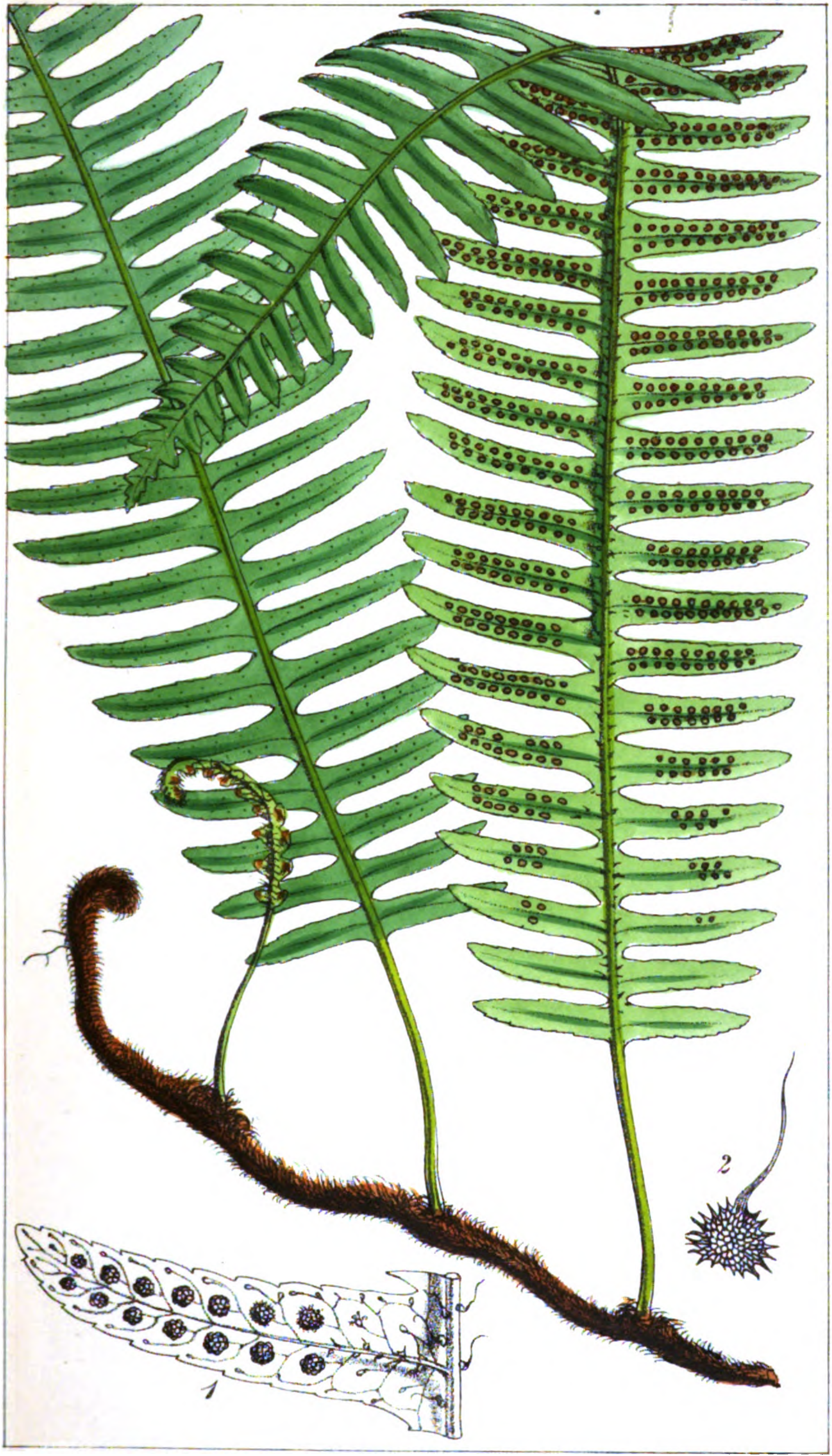
Frondibus glaberrimis membranaceis firmis oblongo-lanceolatis acuminatis profunde fere ad costam pectinatim pinnatifidis, lobis linearibus acutiusculis obtuse serratis ad costam subtus minute nigro-squamulosis, squamulis cordatis ciliatis longe cuspidatis nigris, soris uniserialibus, venulis prope costam areolas formantibus reliquis liberis furcatis, stipite brevi nudo, caudice longe repente nigro-paleaceo.

Polypodium lachnopus, *Wall. Cat. n.* 310.
HAB. Nepal and Kamaon, *Wallich.* Khasya, *Drs. Hooker* and *Thomson.*

Mr. J. Smith brings this into the genus *Goniophlebium,* Presl, and this he unites with *Marginaria,* Bory and Presl.: but the venation of Presl's *Goniophlebium* is very different from that of *Marginaria,* which is what is represented at the base of the lobe or segment of our plant (see fig. 1.) while all the rest of the lobe has the venation of true *Polypodium,* with free veins clubbed at the apex. Our plant is thus intermediate between the two genera now mentioned. The minute scales at and near the main costa present a beautiful appearance under the microscope: they are nearly black, almost orbicular, finely reticulated and have a long cuspidate or setiform point. (*f.* 2.) Under a lens too the upper side of the costa will be found pubescent.

Fig. 1. Fertile lobe, seen from beneath, and showing the venation. *f.* 2. Scale from the rachis beneath:—*magnified.*

Tab. 52.



Fitch del. et lith.

Pamplin imp.

TAB. LIII.

POLYPODIUM (Drynaria) ROSTRATUM, *Hook.*

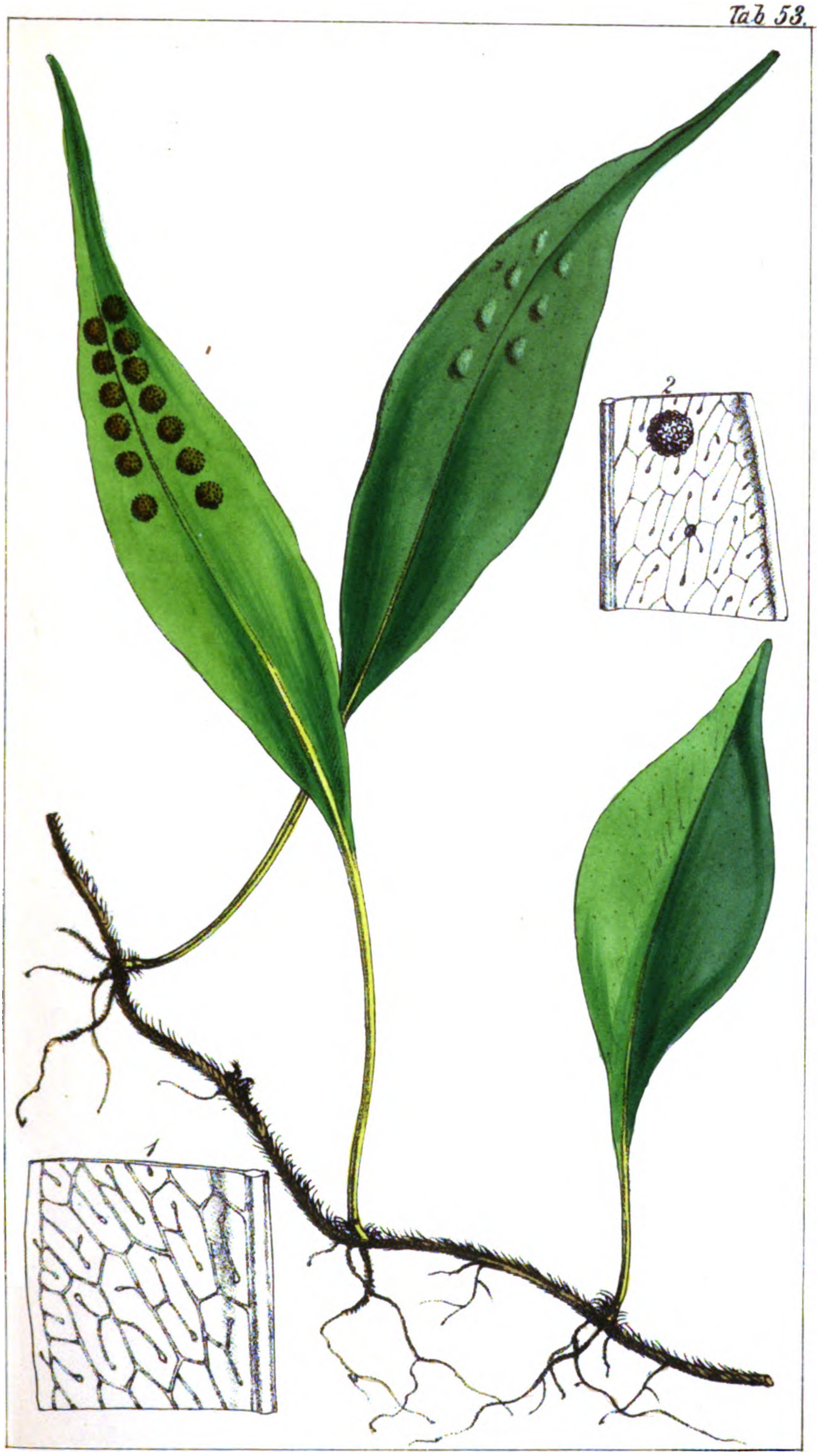
Frondibus elliptico-lanceolatis rostrato-acuminatis basi attenuatis chartaceis opacis integerrimis glabris, soris magnis costam versus subuniseriatim dispositis, venis omnibus uniformibus reticulatis, areolis hexagonis oblongis, venulis liberis simplicibus furcatisve, stipite gracili fronde breviore, caudice gracili elongato filiformi.

HAB. Khasya, *Drs. Hooker* and *Thomson.*

A *Polypodium* of the *Drynaria* or *Phymatodes* group, which does not appear to be known hitherto to Botanists. Unlike that at our Tab. 51, it has no costulæ, in other words the costa is not pinnated with strong strait parallel primary veins: the whole surface is reticulated, with oblong hexagons lying in an oblique direction, united by an intramarginal vein, and within each areole is generally one simple or forked, ultimate, free veinlet, the branches are often much divaricated. The frond is of a parchmenty or chartaceous texture, between coriaceous and membranaceous, opaque. The apex runs out into a long, narrow beak, whence the specific name.

Fig. 1. Sterile portion of a frond. *f.* 2. Fertile portion seen from beneath :—*magnified.*

Tab 53.



Fitch del. et lith.

Pamplin exc.

TAB. LIV.

POLYPODIUM (Drynaria) RHYNCHOPHYLLUM, *Hook.*

Frondibus chartaceis glaberrimis nitidis sterilibus oblongo-ovatis obtusis, fertilibus lanceolatis longe acuminatis costulatis costis elevatis, areolis transversim oblongo-tetragonis, acumine sorifero, sterili venatione simpliciore appendiculis subnullis, stipite fronde breviore nudo, caudice elongato repente gracili ramoso copiose paleaceo.

HAB. Assam, *Mrs. Mack*, *Griffith.* Khasya, *Drs. Hooker* and *Thomson.*

Closely allied in general appearance to *Polypodium cuspidiflorum** of Reinwardt, of which we have authentic specimens in our possession from Java, and from Luzon, gathered by Cuming (*n.* 109.) This latter is, however, a much smaller plant, very opaque, with no visible costulæ; the fronds have a broader base, more suddenly tapering into a beak, almost quite sessile, upon an exceedingly slender, filiform caudex, destitute of scales, but throwing out copious woolly fibres. The venation of our present species is seen with difficulty, being quite sunk in the very opaque frond, but from what I do see of it, I should judge I am correct in referring it to *Drynaria*, Presl. M. Fée, however, places it in the genus *Craspedaria*, Link, which corresponds with the first section of Presl's *Marginaria*, though I suspect the venation is very different.

Fig. 1. Sterile portion of a frond, showing the venation. *f.* 2. Fertile portion of a frond, showing its peculiar venation: —*magnified.*

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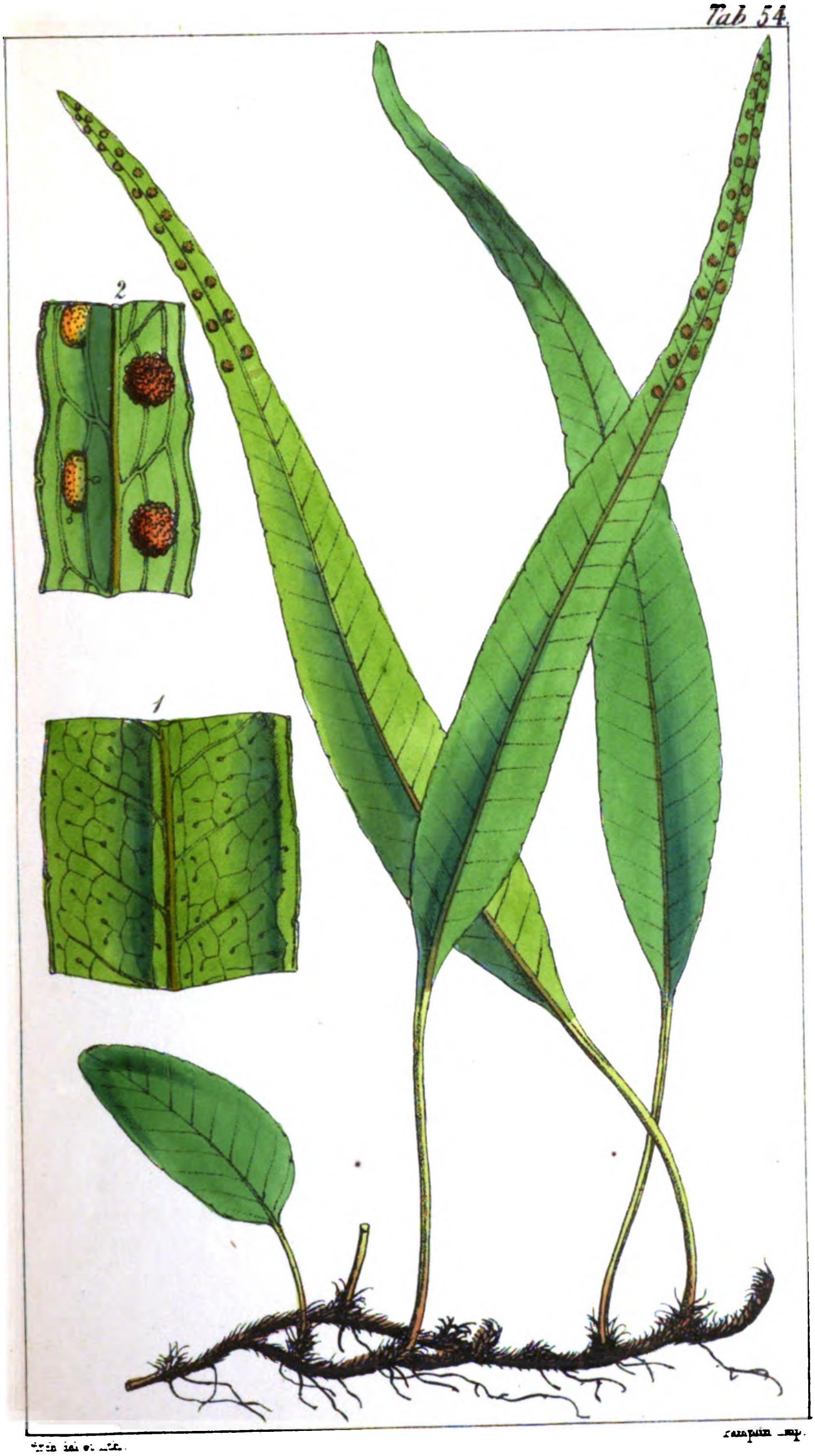
* A species nowhere described as far as I can find.

Tab 54.



[illegible] del. et lith.

[illegible] imp.

TAB. LV.

CYSTOPTERIS DOUGLASII, *Hook.*

Parva, frondibus membranaceis firmis glabris oblongo-lanceolatis pinnatis, pinnis inferioribus latioribus subovatis acuminatis acutiusculis pinnatifidis, lobis lato-oblongis ovatisve obtusis obtusedentatis, superioribus oblongo-lanceolatis obtusis lobato-pinnatifidis decurrentibus coadunatisque, soris majusculis, involucris reticulatis suborbicularibus dentatis cito capsularum pressione reflexis, stipite brevi.

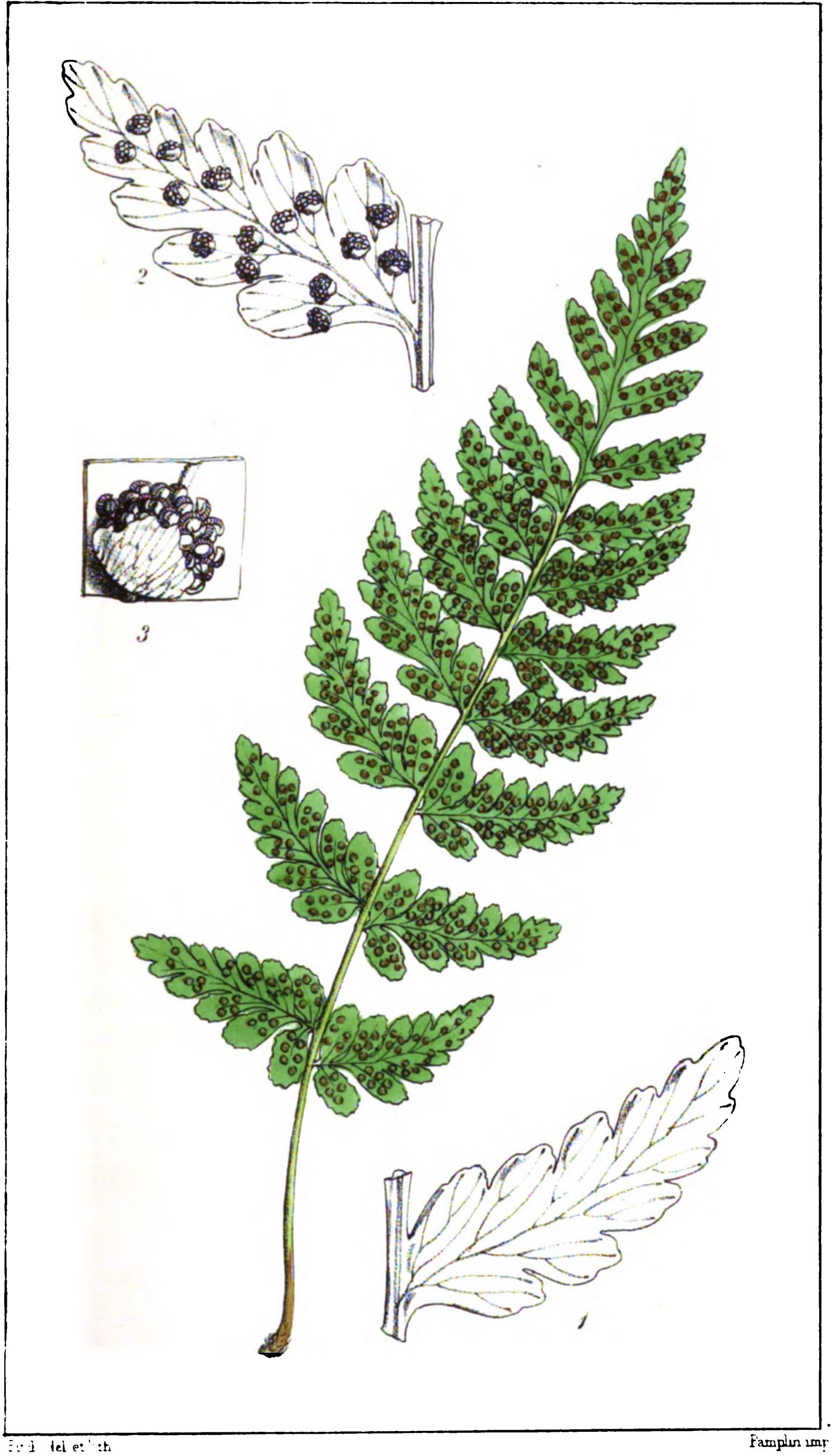
Cystopteris Douglasii, *Hook. Gen. Fil.* 1, *p.* 200.

HAB. Sandwich Islands, *D. Douglas.*

Stipes short, naked. Frond firm, rather rigid, of a dark, lurid green colour in the dried state. The form of the pinnæ and segments approaches that of the N. American *C. bulbifera*, but they are broader and much less compound. The fructification, though much advanced in our specimens, is clearly that of the present genus.

Fig. 1. Upper pinnæ, seen from above. *f.* 2. lower pinnæ, fertile, seen from beneath. *f.* 3. Sorus:—*magnified.*

Tab 55.



[illegible] del et lith

Pamplin imp

TAB. LVI.

HYMENOPHYLLUM ASPLENIOIDES, *Sw.*

Frondibus oblongis obtusis pendulis (siccitate fusco-brunneis) profunde pinnatifidis, lobis ovatis rarius integris plerumque bi-tri-quadrifidis nunc subpalmatis, lobulis obtusis apice soriferis, involucris solitariis (singulo lobulo) fere orbicularibus liberis integerrimis basi cuneata solummodo immersa profunde bivalvibus, receptaculo brevi onmino incluso, stipite tenui fronde breviore.

Hymenophyllum asplenioides, *Sw. Syn. Fil p.* 145. *Hook. Gen. et Spec. Fil.* 1. *p.* 87.

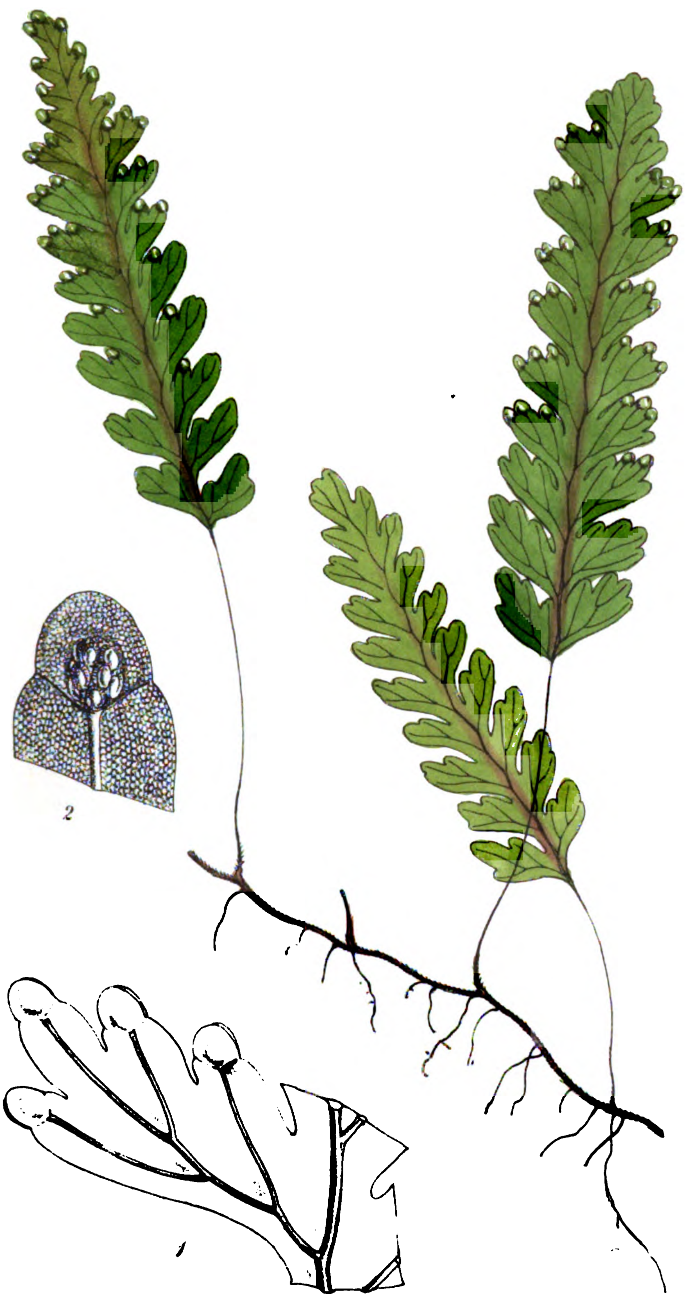
H. palmatum, *Klotzsch, in Herb. Reg. Berol. et in Herb. Hook.*

HAB. On the trunks of trees, Jamaica, (*Herb Nostr.*) Brazil, *Sellow.*

None of the great Fern Family more needs illustration by good figures than the species of *Hymenophyllum* and *Trichomanes.* One cannot say much in praise of the representations of this plant by Lamarck and Hedwig, quoted in the Genera et Species Filicum. It is, indeed, a distinct and well marked plant, and yet, Dr. Klotzsch, did not recognise his *Hymenophyllum palmatum* to be identical with it. When the primary segments of the fronds bear three or four lobes with the sori upon them, they are necessarily broader and subpalmate:—so that one cannot really consider such a character worthy of being recorded as constituting even a variety. The fewer or greater number of lobules may be seen on one and the same plant. The caudex is long, creeping, filiform. The texture of the frond is firm, composed of closely placed minute areoles. The venation consists of a central costa, and veins to each primary segment, sending off free branches to the apex of every lobe.

Fig. 1. A primary segment or lobe, with fructifications:—*magnified. f.* 2. A lobule with sorus, one of the valves of the involucre being removed:—*more magnified.*

Tab 56.



Fitch del et lith

Pamplin imp

TAB. LVII.

LINDSÆA MEDIA, *Br.*

Subelata glaberrima, frondibus subcoriaceis ovato-lanceolatis acuminatis bi-tripinnatis, pinnulis oblique rhombeis obovato-cuneatisve inferioribus sublobatis reliquis integris, sterilibus serratis, venis flabellatis ramis sæpe anastomosantibus, soris dimidio superiore continuis, stipite elongato tetragono, rachibus tenui-alatis.

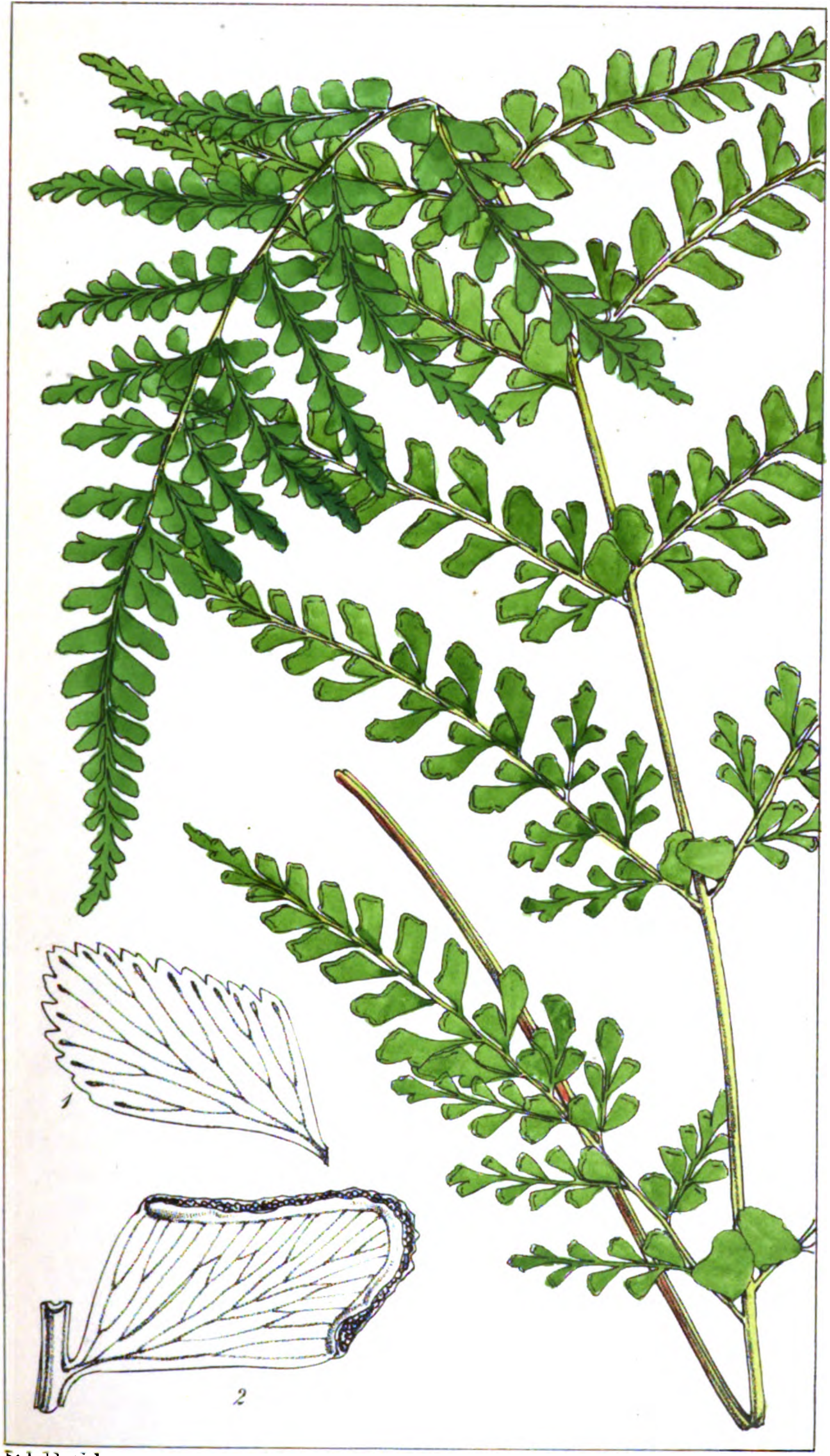
Lindsæa media, *Brown, Prodr. Fl. Nov. Holl. p.* 156. *Hook. Gen. et Sp. Fil.* 1. *p.* 212.

HAB. Tropical shores of New Holland, *Brown.* East Coast of Tropical New Holland, *All. Cunningham.* Fitzroy Islands, *J. MacGillivray, Esq.*, (*Voy. of the Rattlesnake, n.* 256. *β.*)

A very rare and little known *Lindsæa,* belonging to the same group or division as *L. flabellulata,* and *L. tenera* of Dryander, but very distinct as a species. Mr. MacGillivray has put us in possession of fine specimens, which have enabled us to give the accompanying figure. The primary pinnæ are all very much acuminated, the ultimate ones extremely narrow, minute, and coadunate into a lobed point. The rachises are margined with a narrow wing. Of the fertile pinnules some have the flabellate dichotomous veins free, others anastomosing; in the sterile ones I believe always free, with the apices of the veins clavate. Some authors who feel the propriety of retaining the genus *Isoloma,* would perhaps place it there.

Fig. 1. Sterile pinnæ with its free veins. *f.* 2. Fertile pinnæ, with anastomosing veins:—*magnified.*

Tab 57.



Fitch del et lith

Pamplin imp

TAB. LVIII.

LINDSÆA CAUDATA, *Hook.*

Stipite tereti rachique purpureo-ebeneis nitidis, fronde ampla bipinnata, pinnis angustis numerosis (11-17) lineari-oblongis apice longe caudato-acuminatis, pinnulis semiovalibus lunulato-falcatis decurvis obtusis membranaceis approximatis, basi superiore truncatis, margine superiore fere semicircularibus integerrimis, terminalibus sensim minoribus demum in acumen confluentibus, soris omnino marginalibus ad apicem continuis.

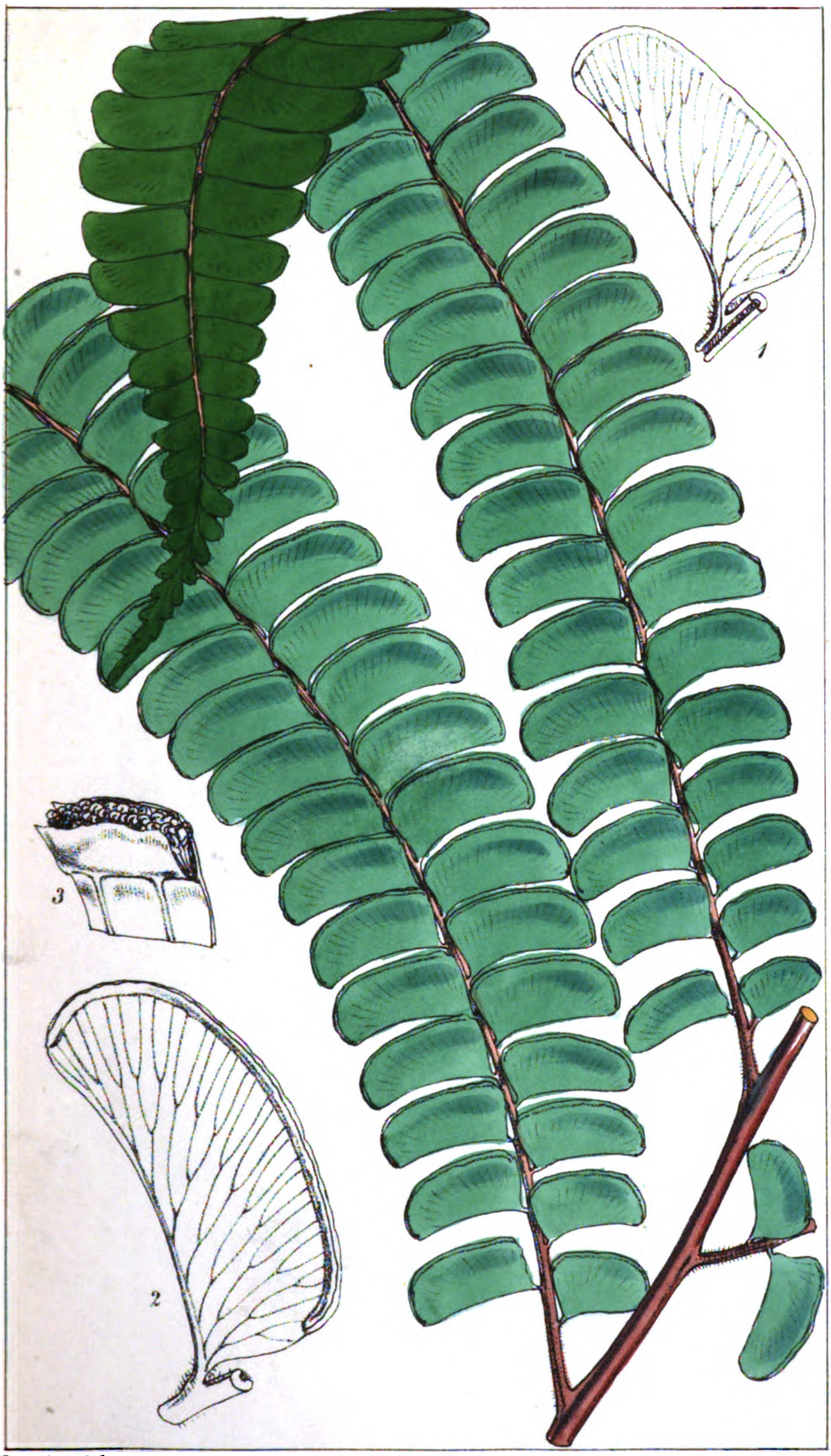
Lindsæa caudata, *Hook. Gen. et Sp. Fil.* 1. *p.* 215.

HAB. Adam's Peak, Ceylon, *Mrs. Genl. Walker.*

Nearly allied to *L. trapeziformis*, Dryander, which species is found in the East as well as the West Indies: but the present plant has more numerous pinnæ on the frond, tapering to a tail-like point, blunted pinnules, exactly marginal sori; terete and darker coloured stipes;—and these marks are found in four fine specimens received from Ceylon at different periods. This dries to almost a black colour;—*L. trapeziformis*, retains its bright green in the Herbarium.

Fig. 1. 2. Fertile pinnules. *f.* 3. Portion of a fertile pinnule, showing the position of the involucre at the very edge of the pinnule:—*magnified.*

Tab 58.



Fitch del et lith
Pamplin imp

TAB. LIX.

CYSTOPTERIS TASMANICA, *Hook.*

Parva gracilis, stipite rachique capillaribus, frondibus oblongis pinnatis, pinnis late ovatis obtusis inciso-lobatis superioribus decurrentibus inferioribus subpetiolatis pinnatifidis, lobis ovatis obtusis integris vel subdentatis, soris paucis minutis, involucris ovatis acuminatis, rachi superne alata.

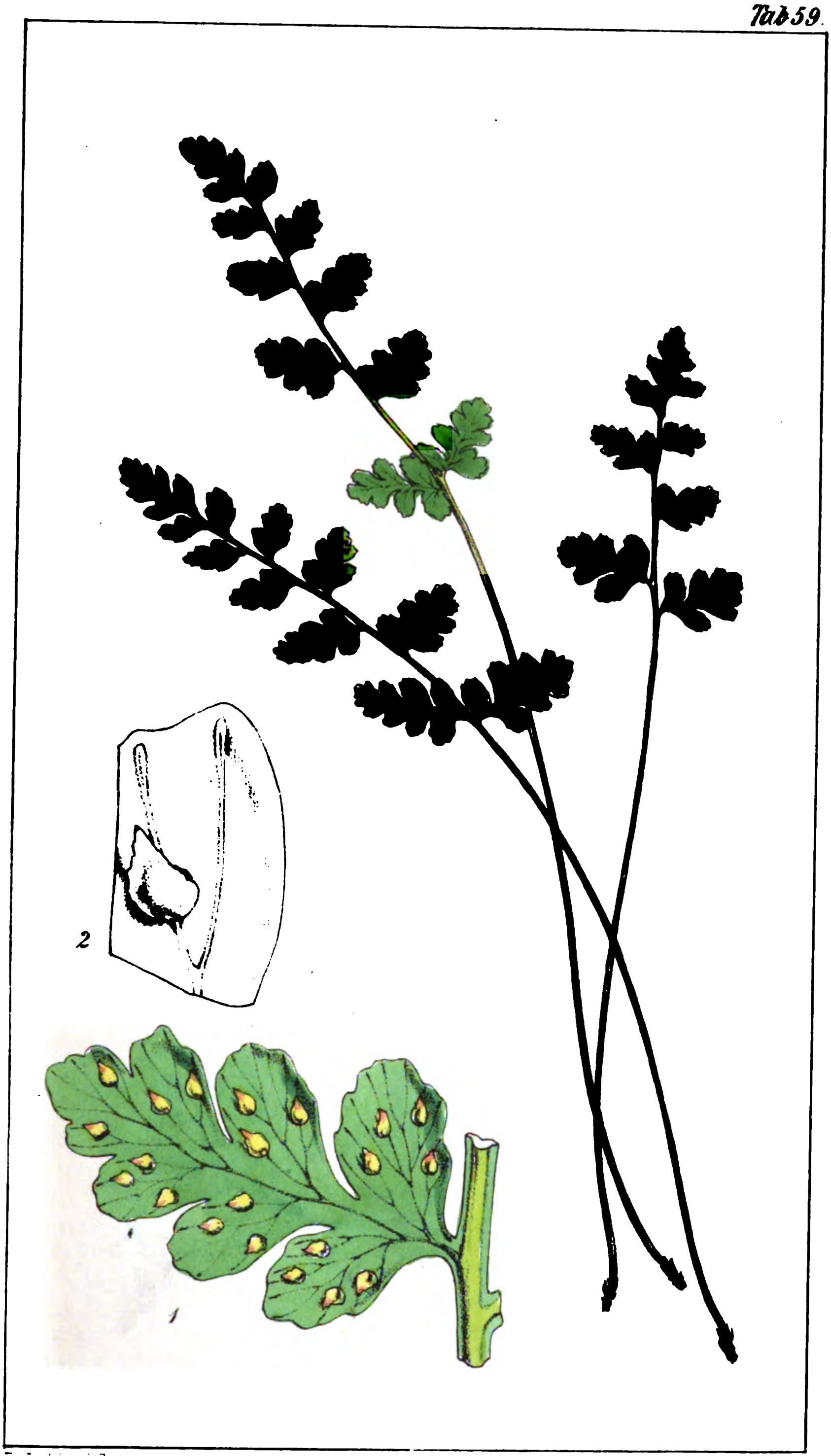
Cystopteris Tasmanica, *Hook. Gen. et Sp. Fil.* 1. *p.* 199.

HAB. Van Dieman's Land, *R. Gunn, Esq.*

As I have already observed elsewhere, I was at one time disposed to refer this to some of the states of the var. *dentata* of *C. fragilis*, but the fact of Mr. J. Smith having received from the same country, though from a different source, an exactly similar plant, together with the delicate habit, large (comparatively) and broad, sparingly divided pinnæ and small fructifications, induce me to keep it distinct. Caudex slightly creeping in one of our specimens. Whole plant including the stipes, 4-6 inches high.

Fig. 1. Fertile pinna, seen from beneath. *f.* 2. Sorus and involucre: —*magnified.*

Tab 59.



Fitch del. et lith.

Pamplin imp.

TAB. LX.

LOMARIA NIGRA, *Col.*

Parvula luride viridis, frondibus sterilibus linearibus sublyrato-pinnatifidis, lobis (inferioribus nunc discretis) oblongis obtusis sinuato-crenatis glaberrimis infimis marginibus costis rariusque paginis inferioribus tomentosis, terminali maxima basi lobata, fertilibus pinnatis, pinnis paucis distantibus suberectis anguste linearibus apice subulatis acuminatis v. apiculatis, terminali elongata, rachi parce stipitibusque sparse paleaceis.

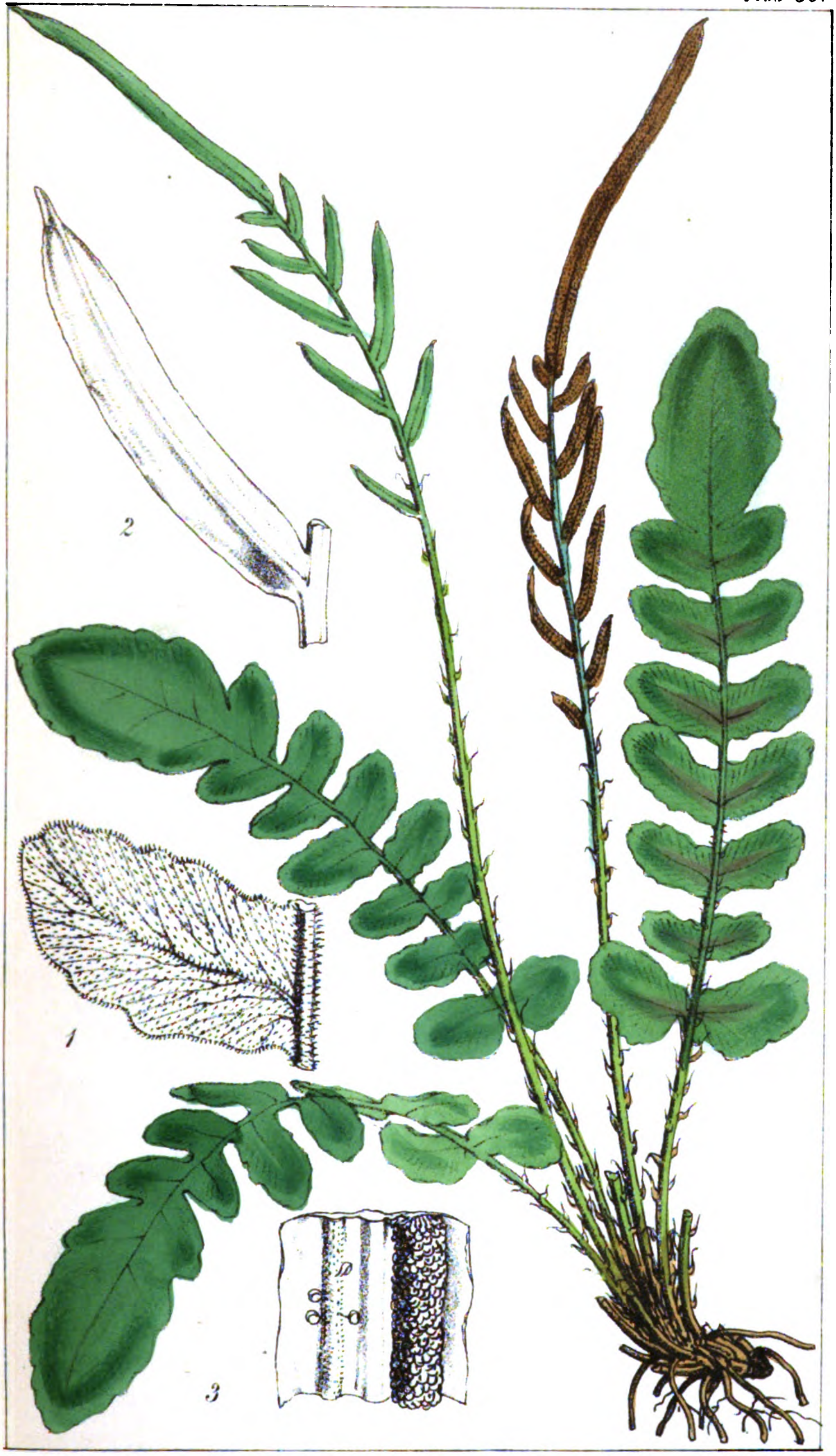
Lomaria nigra, *Colenso in Tasm. Phil. Journ.*

HAB. New Zealand, dense forests between Tauranga and Roturua, East Coast: *Rev. W. Colenso, n.* 299. 331.

This is a very anomalous plant, and has rather an unnatural appearance, the fronds being blackish or lurid, brittle when dry, the pinnules often erose, sinuate and irregular in size and outline; as if it had grown in an ungenial locality. Mr. Colenso's specimens are good ones, however, and uniformly display the peculiar characters which separate it from its allies. In habit, general appearance, paleaceous rachis, and other points, it clearly resembles *L. fluviatilis*, Br. Prod. (L. rotundifolia, *Raoul,*) a denizen of similar localities; in its typical state that plant has pinnate barren fronds, with the lower pinnules stipitate, (a tendency to which may be seen in the lower pinnæ of our plate of *L. nigra*), the terminal one does not run out into a long lobe, and the fertile pinnules are shorter and blunter. To the infinitely variable *L. lanceolata* again (Hook. Icones 429) the *L. nigra* is allied by the pinnatifid fronds, and narrow fertile pinnæ with subulate tips. The pubescence consists, in the dried state, of a short rufous tomentum, sometimes spread over the under surface of the pinnæ, at others confined to the margins and costæ, and sometimes it is wholly absent.—J.D.H.

Fig. 1. Pubescent pinna. *f.* 2. Fertile pinna. *f.* 3. Transverse section of the same, with the involucres reflexed showing the sori:—*all magnified.*

Tab 60.



Fitch del. et lith
Pamplin imp.

TAB. LXI.

ADIANTUM GLAUCOPHYLLUM, *Hook.*

Elatum, frondibus ovatis supradecompositim pinnatis, pinnis subchartaceo-membranaceis glabris utrinque glaucis longiuscule petiolulatis oblique cuneatis margine superiore rotundato 2-5 lobo, lobis obtusis emarginatis v. bifidis, lobulis fructiferis subincurvis, sinubus soriferis, soris mediocribus, involucris orbiculari-reniformibus demum subcoriaceis, stipite rachique gracili ebeneis nitidis.

Adiantum glaucophyllum, *Hook. Gen. et Sp. Fil.* 2. *p.* 40.

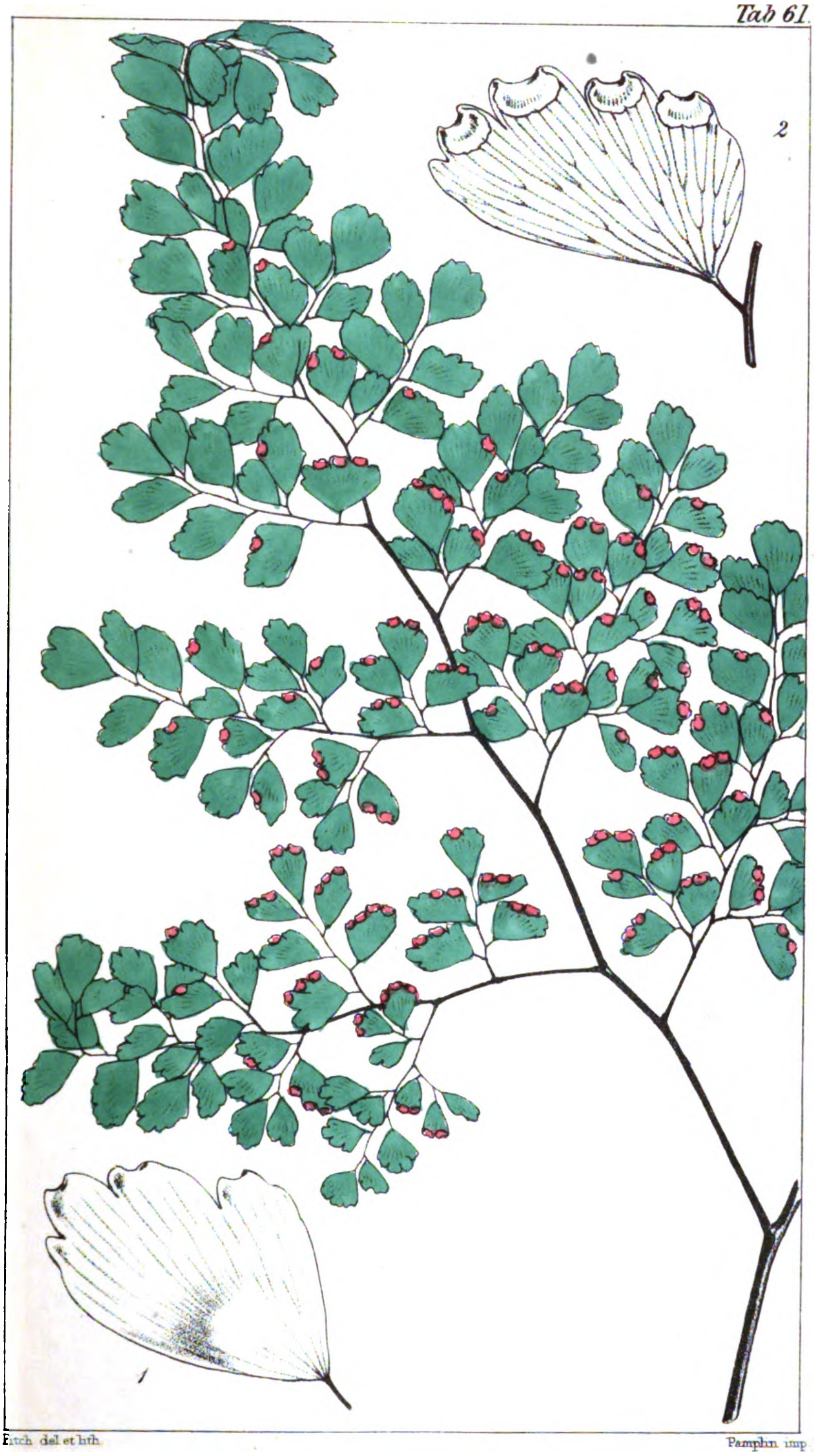
A. cuneatum, var. angustifolium, *Mart. et Galeot. Fil. Mex. p.* 70.

HAB. Cordillera of Mexico, inhabiting the cold region, at an elevation of 6,000 to 10,500 feet above the level of the sea, *Galeotti n.* 6,266. and 6,359. (the latter with narrower, more rigid, and almost coriaceous fronds) and *n.* 6566; Pic Orizaba, 9750 feet; *Linden, n.* 48. *Jurgensen, n.* 322. *Mr. Parkinson,* "Teapisca (Chiapas)," *Linden, n.* 1550. Baqueti, Veraguas, Central America, *Seemann.*

M.M.Martens and Galeotti referred their *Adianta* from the stations above alluded to, in Mexico, to the S. Brazilian *A. cuneatum* of Langsdorff and Fischer, as narrow pinnuled varieties; but I have other specimens from Linden and Seemann, and all agree in the characters above given. All accord, too, in being of a larger size and more compound than that species, with usually narrower, more rigid, always more glaucous pinnules, together with a less deep and narrow notch for the reception of the sori; and not only do they thus agree in the respective characters, but I have not seen anything to correspond with the present, except from Mexico and the adjacent Isthmus; certainly no such appearances are exhibited by any true Brazilian *A. cuneatum.* It is of the *Capillus-Veneris* group, and is I think more nearly allied to the East Indian *A. venustum,* Don, than to any other.

Fig. 1. Sterile pinnule. *f.* 2. fertile pinnule :—*magnified.*

Tab 61.



Fitch del et lith
Pamplin imp

TAB. LXII

Hymenophyllum flexuosum, *All. Cunn.*

Frondibus erectis subrigidis glaberrimis deltoideo-ovatis tri-quadripinnatifidis, segmentis linearibus obtusis undulatis integerrimis ultimis plerumque furcatis, involucris terminalibus segmento latioribus orbicularibus integerrimis liberis (omnino exsertis) ad basin bivalvibus, valvis convexis, receptaculis inclusis, stipite rachique alata crispata marginatis.

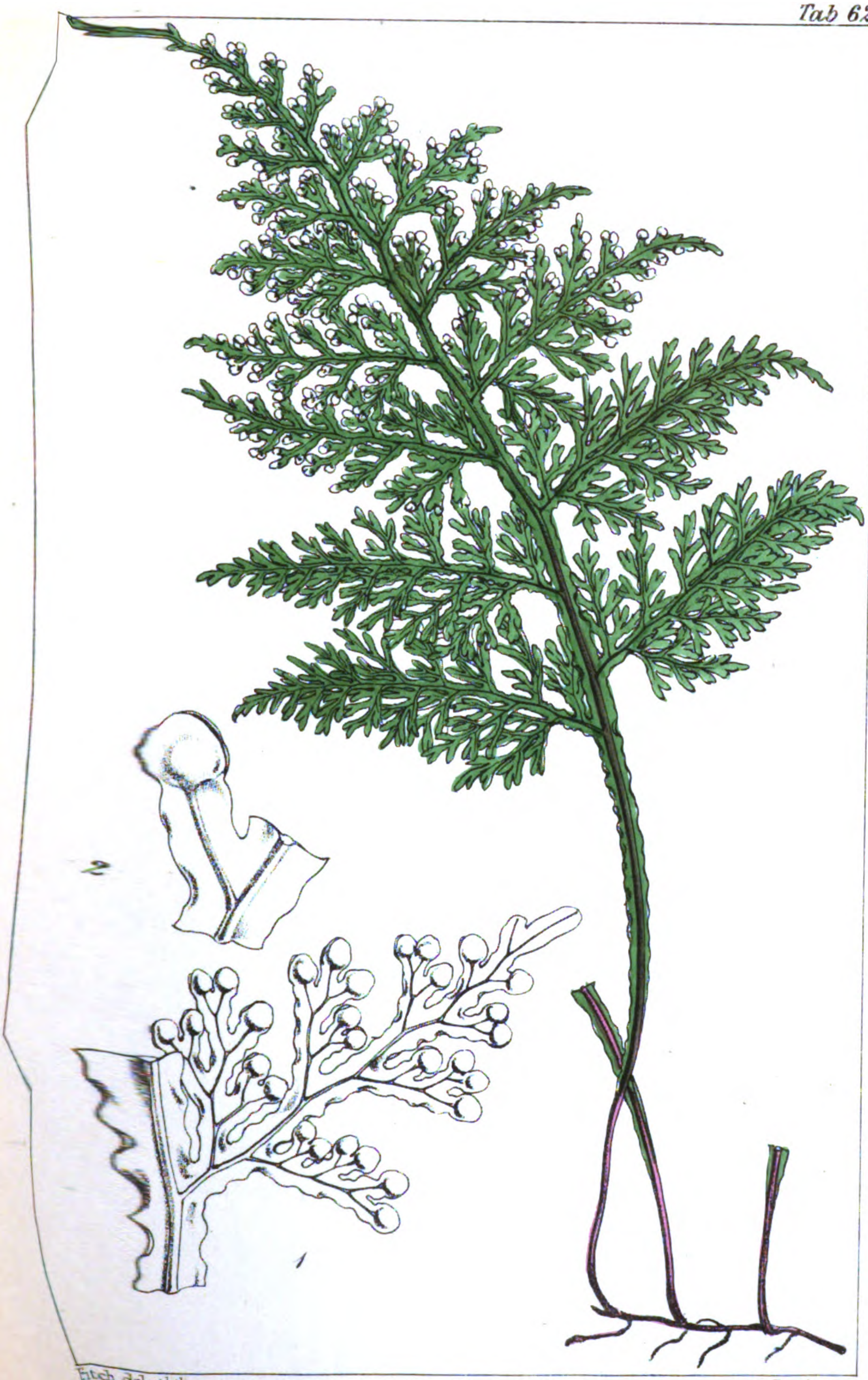
Hymenophyllum flexuosum, *All. Cunn. Fl. Nov. Zel. in Hook. Comp. to Bot. Mag.* 2. *p.* 369. *Hook. Gen. et Sp. Fil.* 1. *p.* 105.

Hab. New Zealand, Northern Island, *All. Cunningham, Colenso, Dr. Logan, J. D. Hooker.*

Apparently a common species, on the trunks of trees, in woods, in the northern island of New Zealand. It bears the orbicular involucres of *H. Javanicum,* but they are not confined to short lateral segments as in that species:—nor is the shape of the involucres like that of *H. crispatum.* The fronds are more deeply and copiously divided than either, more crisped, especially in the wings of the rachis and stipes, and the general habit is different, though difficult to be described in words. It seems to hold a middle rank between the two East Indian species just mentioned.

Fig. 1. Portion of a fertile plant. *f.* 2. Sorus:—*magnified.*

Tab 62.



Fitch del et lith.

Pamplin imp

TAB. LXIII.

HYMENOPHYLLUM FUCOIDES, *Sw.*

Frondibus oblongis acuminatis inferne pinnatis, pinnis ovato-oblongis bipinnatifidis superne bitripinnatifidis segmentis lineari-oblongis obtusis acutissime serratis, costis non raro spinosis, soris in ramos breves lateralibus, involucris ovatis lato-obovatisve magis minusve spinuloso-dentatis infra medium bilabiatis, receptaculis inclusis.

Hymenophyllum fucoides, *Sw. Fl. Ind. Occ. p.* 1747. *Syn. Fil. p.* 146. *Willd. Sp. Pl.* 5. *p.* 523. *Hook. Gen. et Sp. Fil.* 1. *p.* 101.

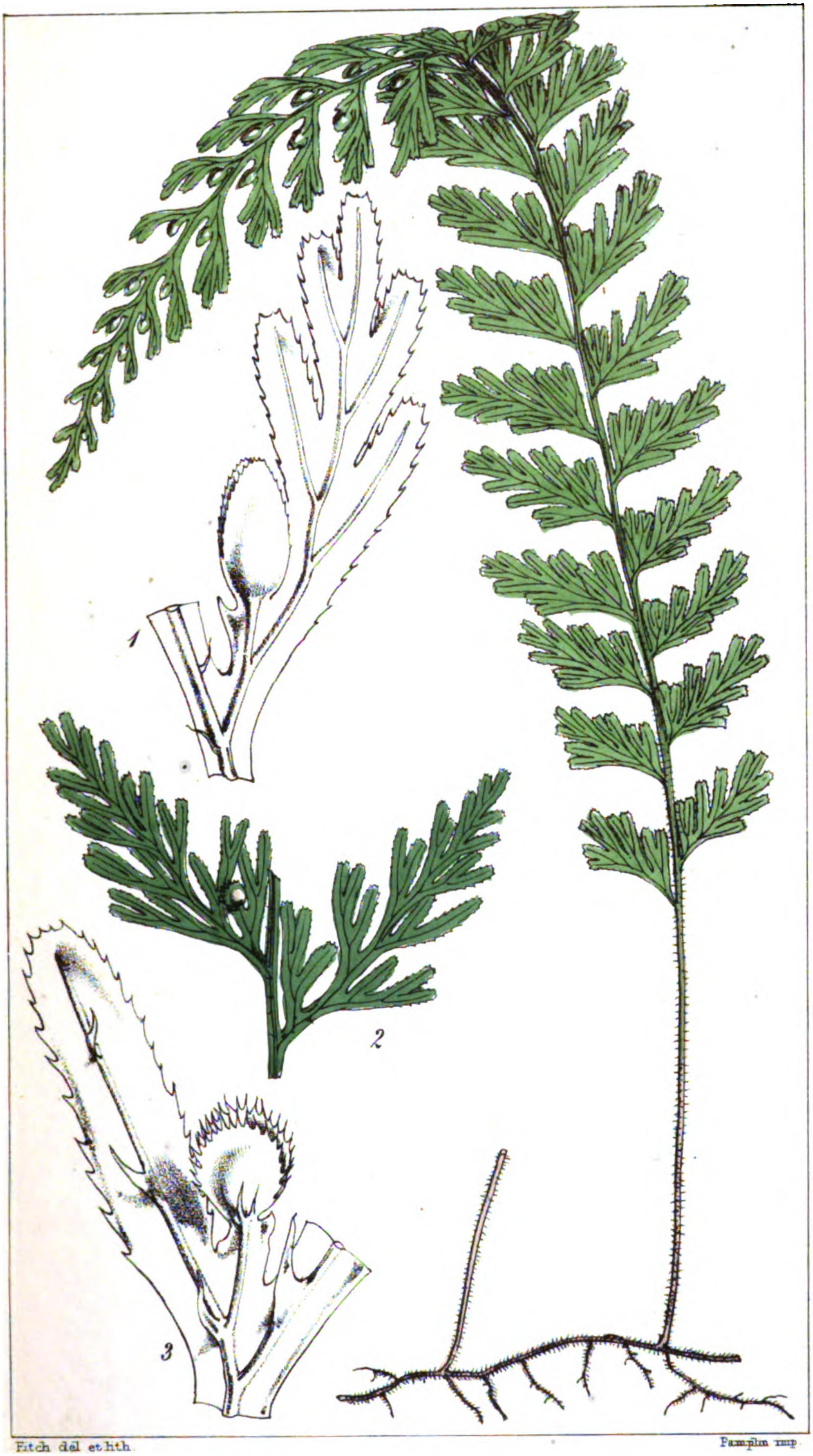
Trichomanes fucoides. *Hedw. Fil. cum Ic.*

HAB. Jamaica, *Swartz*, *Purdie*. Martinique, *Sieber*. Summit of the Organ mountains, Brazil, *Gardner*, *n.* 5951. Peru, *Poeppig*. Forests of the Columbian Andes, *Jameson*. Mexico, *(Kunze)*. Caraccas, *Linden*, *n.* 57.

Some of our specimens are nearly twice the size of that here represented; especially those from Prof. W. Jameson: and it is certain that the form of the involucre is very variable, sometimes ovate and nearly entire, sometimes, and, more frequently, broadly obovate and more or less deeply spinuloso-serrate. The rachis is not winged below by the decurrent side branches, and hence the frond is there pinnated; while above, the rachis is so winged as to constitute a bi- or tripinnatifid frond. The stipes is wingless too, and often roughly setose, with short harsh hairs. The root is a creeping, slender, filiform, downy caudex, and runs extensively over rocks and trees.

Fig. 1. Pinna or primary lobe, with an ovate involucre:—*magnified.* *f.* 2. Portion of a fertile frond with a broader obovate involucre:—*less magnified.* *f.* 3. Lesser portion of a frond, with broadly obovate involucre, and spines on the rachis:—*magnified.*

Tab 63.



Fitch del et lith.

Pamplin imp.

TAB. LXIV.

HYMENOPHYLLUM UNDULATUM, *Sw.*

Humile pendens, frondibus oblongis ovatisve tri-quadripinnatifidis inferne nunc pinnatis, lobis primariis patentibus, ultimis brevibus subpatentibus oblongis integerrimis obtusis vel emarginatis omnibus undulato-crispatis, rachibus alatis undulatis valde crispatis, involucris raris in lobos breves terminalibus liberis orbiculari-ovatis usque ad basin bivalvibus, valvis convexis integerrimis, stipitibus gracilibus nudis.

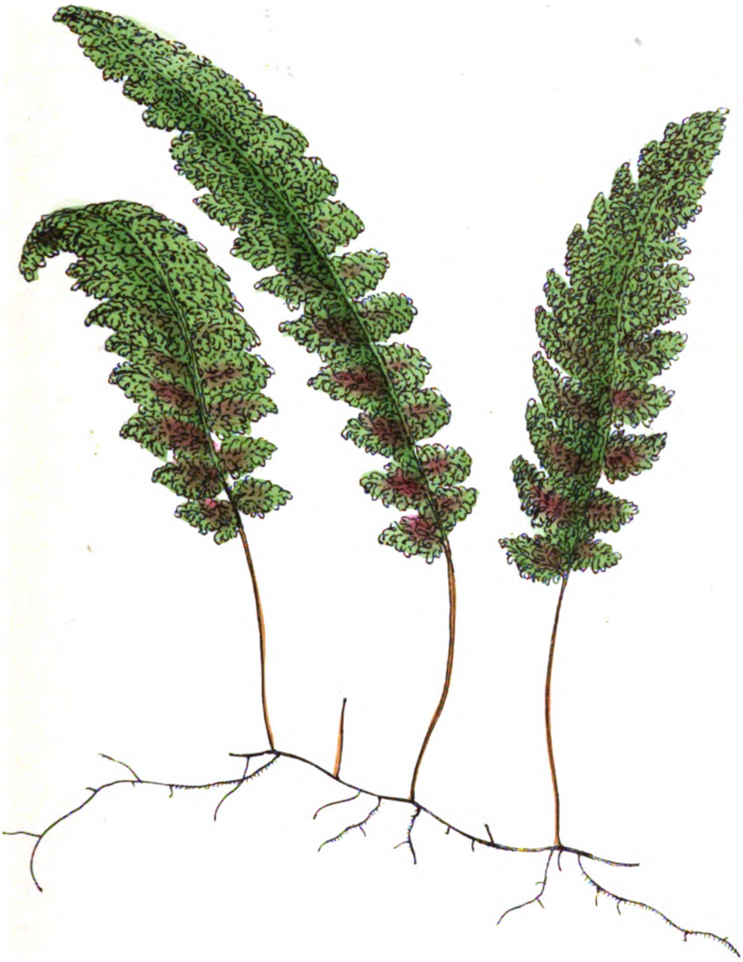
Hymenophyllum undulatum, *Sw. Fl. Ind. Occ. p.* 1751. *Syn. Fil. p.* 148. *Willd. Sp. Pl.* 5. *p.* 533. *Hedw. Fil. cum Ic. Hook. Gen. et Sp. Fil.* 1. *p.* 105.

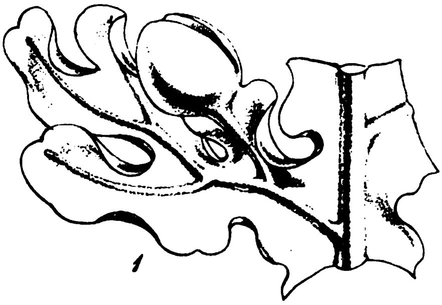
HAB. Jamaica, *Swartz*, *Menzies.* Mountains of Andinarca, Peru, *Mathews.*

A very distinct species. The stipes varies from one to three inches long. Fronds three four or five inches long, in every part beautifully and regularly undulato-crispate.

Fig. 1. Portion of a fertile frond:—*magnified.* *f.* 2. Involucre, from which one valve is removed:—*magnified.*

Tab 64.





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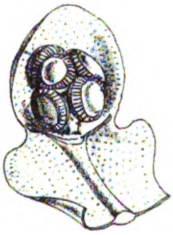


2

Fitch del et lith.

Pamplin imp.

TAB. LXV.

ADIANTUM FRAGILE, *Sw.*

Frondibus cæspitosis ovato-lanceolatis tri-quadripinnatis, pinnulis brevi-petiolulatis (petiolulis gracillimis) tenui-membranaceis obovato-cuneatis basi in petiolulum articulatis apice rotundatis, sterilibus serratis, fertilibus 3-4-lobatis omnibus cito caducis, lobis fertilibus retusis sinu soriferis, involucris oblongis rectis, stipite brevissimo vix ullo rachique nigro-ebeneis nitidis, radicibus cæspitosis fibris rigidis lanuginosis.

Adiantum fragile, *Sw. Fl. Ind. Occ.* 3. *p.* 1721. *Syn. Fil. p.* 125.

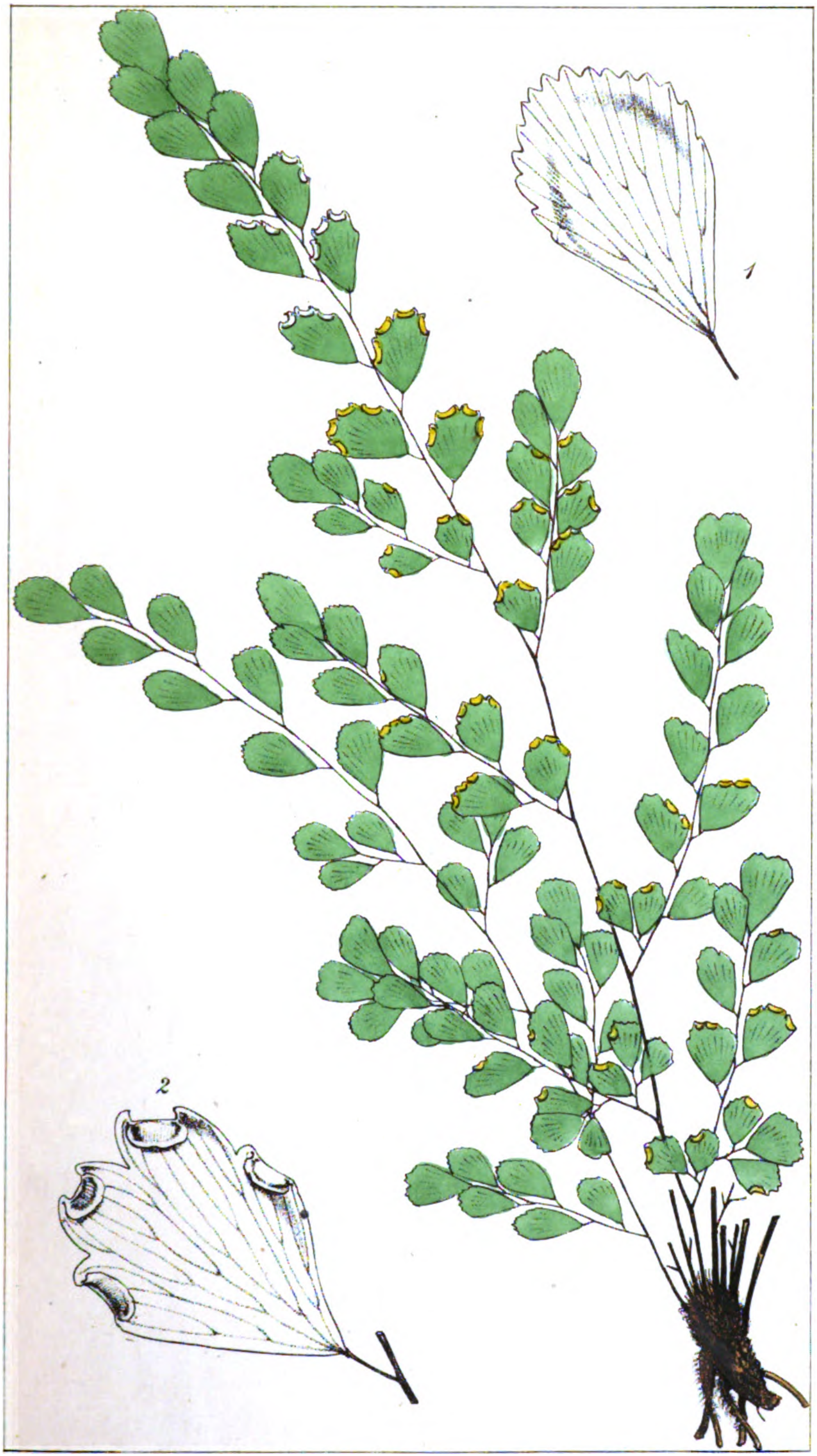
A. cuneatum, *Kunze. Pl. Exsicc. Poepp. in Herb. Nostr.; in Linnæa,* 9. *p.* 82?

HAB. Calcareous Rocks, Jamaica, *Swartz, Dr. Wright, Otto, Wilson, Purdie.* Cuba, *Poeppig.*

I have received West Indian specimens from different persons of this singular and well marked plant, all of them exhibiting the same peculiarity of shedding almost every leaflet or pinnule, a circumstance due to the presence of an articulation where the leaf is inserted upon the petiole: so that the specimens, when they reach me, are mere skeletons, consisting of wiry stipites, with the exceedingly slender and wiry rachis, very much branched, and the petiolules from which the pinnules had fallen, the latter all lying apart from the plant. There are ample characters for recognising this species. I know no *Adiantum* with so peculiar a growth, so tufted, so very short in the stipes, and with such caducous pinnules. In other respects the latter a good deal resemble *A. cuneatum* of Brazil, and *A. venustum* of Northern India.

Fig. 1. Sterile pinnæ. *f.* 2. Fertile pinnæ:—*magnified.*

Tab 65.



Fitch del et lith

Pamplin imp.

TAB. LXVI.

LYCOPODIUM SCARIOSUM, *Forst.*;

var. decurrens.

Caule repente prostrato vage dichotome subflabellatim ramoso, ramis complanatis, foliis majoribus bifariis subimbricatis oblongo-falcatis acutis decurrentibus minoribus stipulæformibus cauli appressis subulatis acutis obtusisve omnibus apice coriaceis rarius scariosis, spicis terminalibus sessilibus v. breve pedunculatis, squamis subsexfariam imbricatis rhombeis rhombeo-ovatisve acutis obtusisve v. apice lamina scariosa appendiculatis marginibus plerumque scariosis.

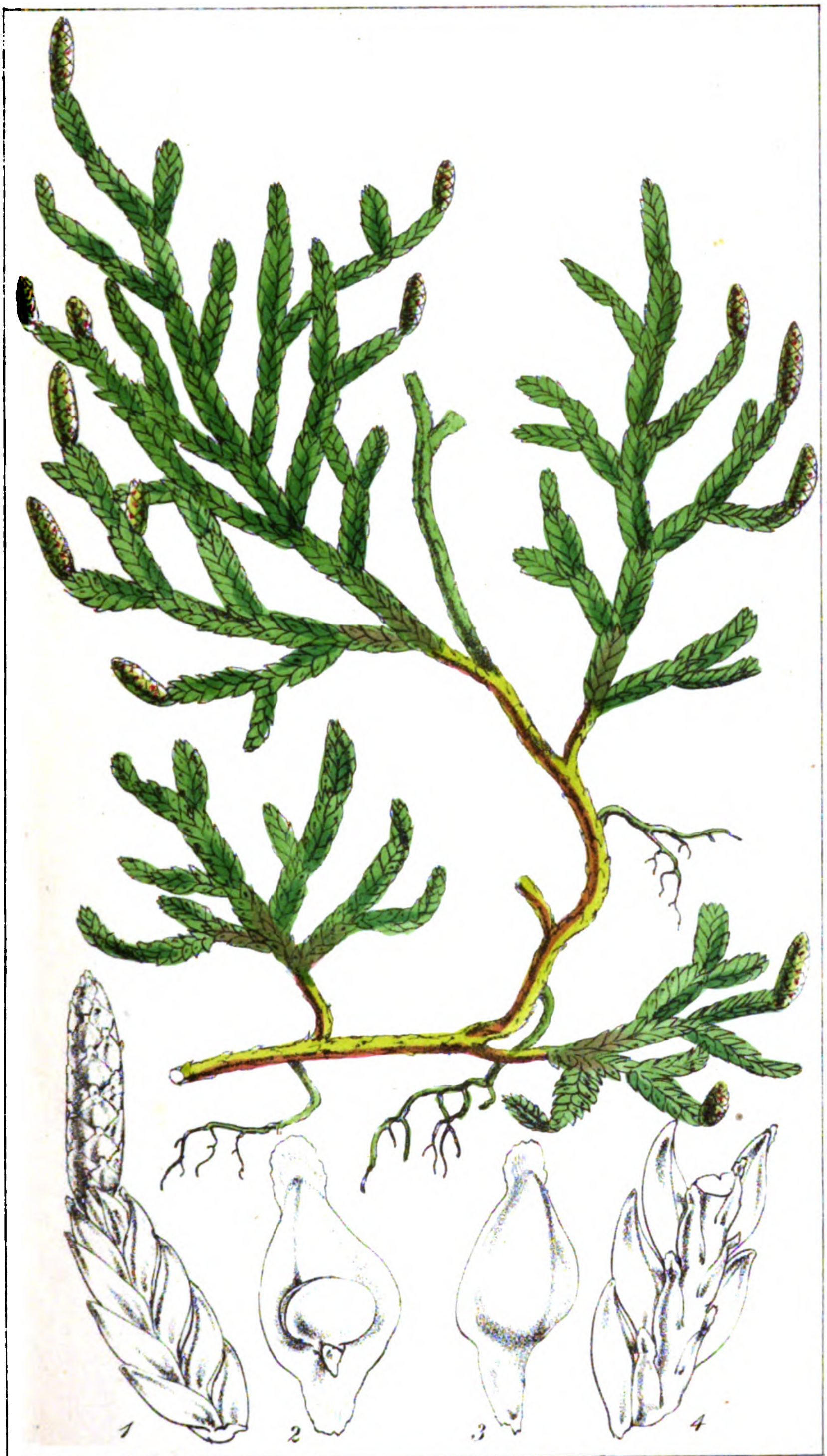
L. scariosum, *var.* decurrens, *Hook. fil. Flor. Nov. Zeland. ined.*

L. decurrens, *Br. Prod. p.* 165.

HAB. Tasmania; summit of the Western mountains, *R. W. Lawrence, Esq.*, Mount Wellington, *R. C. Gunn, Esq.*, *J. D. Hooker.*

The *Lycopodium decurrens* of Mr. Brown was first referred to *L. scariosum,* Forst. by M. Spring, (Monogr. Lycopod. Pars 1. p. 108.); and after a careful examination of very many specimens with a large suite of those of Forster's plant from various parts of New Zealand and others from Lord Auckland's group, we have no hesitation in adopting that opinion. The length of the peduncle, and the presence or absence of the scariose white tips to the larger and stipulary leaves, are most variable characters in the New Zealand plant; and though these tips are generally absent in the Tasmanian plants, some of the leaves show them. The form of the scales of the spike, the breadth of their white margin, and the length and form of their white tips are no less variable; the latter are more or less recurved. The large common state of *L. scariosum* has not hitherto been found in Tasmania: the climate of the better explored districts would appear to be too dry for it. In New Zealand it is common in alpine woods of the Northern Island, and throughout the Middle and Southern, and it is also found in Chili, among the Andes of South America, and in the lofty mountains of Jamaica; it is the *L. Jussieui,* of Desvaux and of Hook. Ic., t. 185. *L. Haenkii,* Presl, and *L. Lessonianum* of A. Rich. (Flor. Nov. Zeland.)—J.D.H.

Fig. 1. Top of branch and spike. *f.* 2. and 3. Scales. *f.* 4. Back view of branch with larger and stipulary leaves: —*all magnified.*



Fitch del et lith.

Pamplin imp.

TAB. LXVII.

GRAMMITIS ASCENSIONIS, *Hook.*

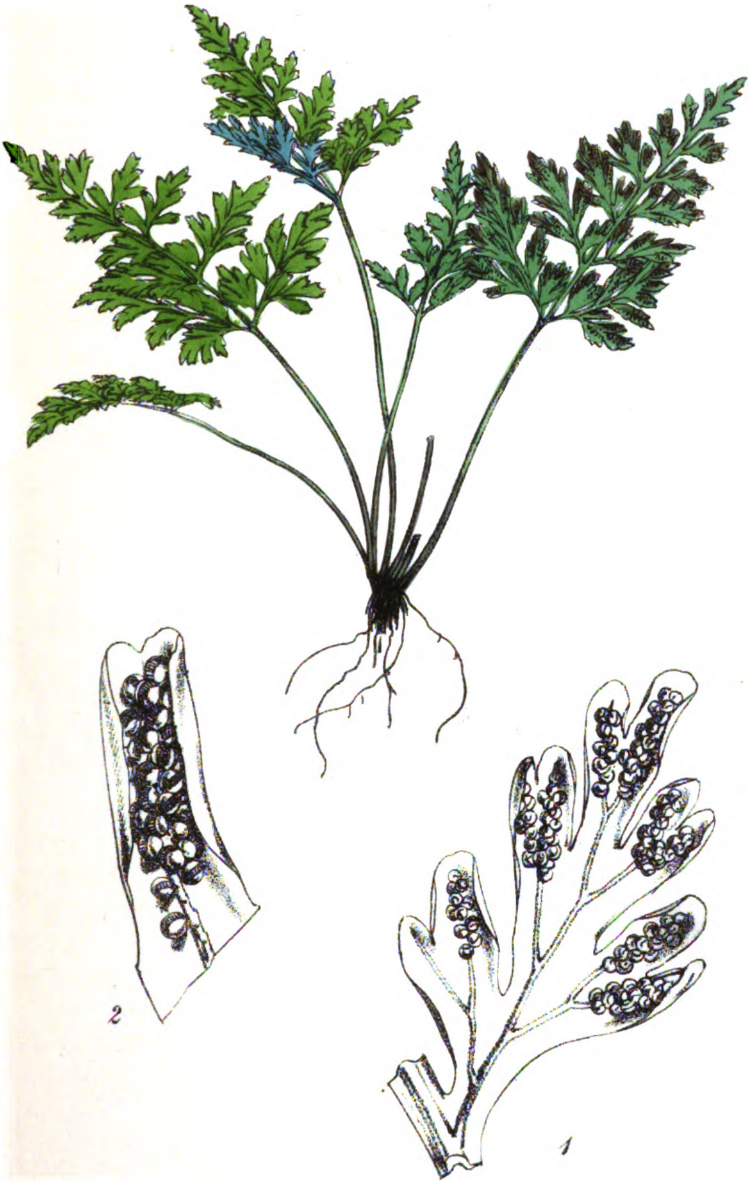
Cæspitosa, humilis, glabra, frondibus triangulari-ovatis membranaceis pinnatis, pinnis profunde pinnatifidis inferioribus bipinnatifidis, laciniis oblongis obtusissimis integris v. bifidis apicibus soriferis, rachi compressa subulata, stipitibus fronde longioribus nudis, radice fibrosa.

HAB. Rocks and Banks on the Green Mountain, Ascension Island, elev. 1,200 to 1,800 feet. *Dr. J. D. Hooker, Dr. Curror.*

In size and texture this pretty *Grammitis* resembles the *G. leptophylla* of Swartz, but the pinnæ and pinnules have nothing of the broad and cuneate form of that species. In ramification it more nearly approaches the *Gymnogramme chærophylla*, but that species is much larger, and the ultimate segments are longer and narrower and almost acute, and the fructifications are more copious and continuous. The present plant is, as far as I know, wholly confined to the Island of Ascension.

Fig. 1. Fertile pinna seen from beneath. *f.* 2. Sorus:—*magnified.*

Tab 67.



Fitch del et lith
Pamplin imp.

TAB. LXVIII.

Lycopodium (§Complanata) casuarinoides, *Spring.*

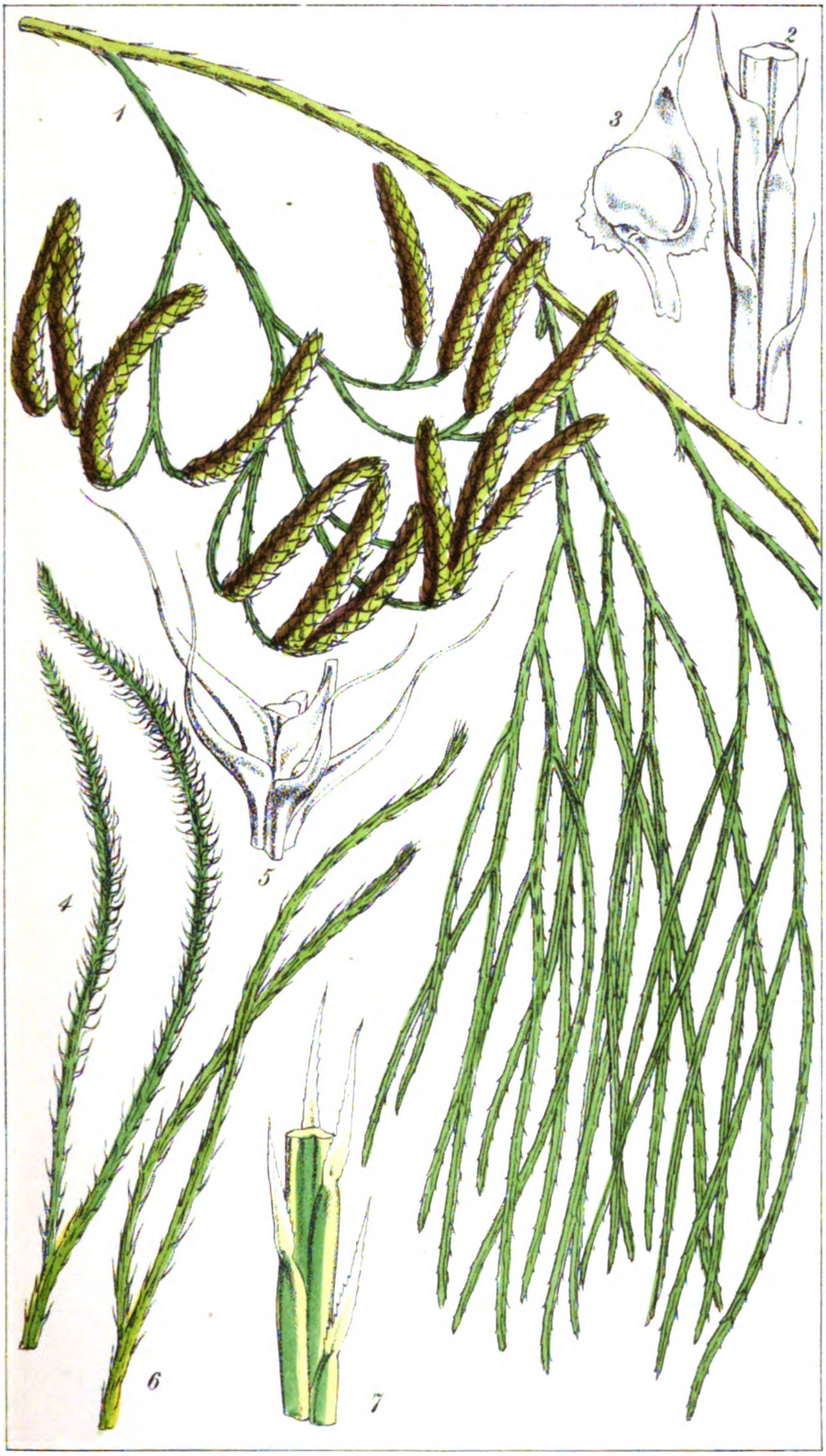
Longissime scandens flexuosum, caulibus teretibus nudis vel subulato-squamosis, ramis copiosissimis dichotome partitis pendentibus rubris rubro-fuscisve comosis anguste linearibus compressis, foliis stipulisque conformibus subulatis sublonge vaginatis apice longe diaphanis albis raro serrulatis, vaginis cum ramo decurrentibus coadunatisque, fertilibus in eadem stirpe dichotome paniculatis omnibus apice spicigeris, spicis sursum curvatis cylindraceis uncialibus, bracteis cordatis denticulatis acumine subulato diaphano.

1. Ramis longissimis nunc pedalibus rectis rubris, foliis appressis brevibus apicibus piliformibus (fig. nostr. 1. 2. 3.) Lycopodium casuarinoides, *Spring, Monogr. Lycop. P.* 1. *p.* 94. *P. II. p.* 45. L. rubellum, *Presl, Bot. Bem. p.* 153. L. comans, *Hook. fil. Fl. Antarct.* 2. *p.* 112. *(in note).* L. leucolepis, *Junghuhn et de Vriese, in litt. (Spring.)*
2. Ramis longissimis rectis rubris, foliis appressis late subulatis totis fere diaphanis scariosis serratis (fig. nostr. 6. 7.)
3. Ramis brevioribus subflexuosis rufo-fulvis, foliis ut in 1. Lycopodium filicaule, *Hook. fil. Fl. Antarct.* 2. *p.* 112. *(in note.)*
4. Ramis longissimis flexuosis rufo-fulvis ultimis laxe foliosis, folis patentibus apice piliformibus subulatis (fig. nostr. 4. 5.)

Hab. Var. 1. Malacca (probably on Mount Ophir), *Cuming, n.* 2346. Var. 2. Mount Ophir, *Thos. Lobb, Sir Wm. Norris.* Var. 3. Moflong, Khasya hills, in Fir forests. *Griffith.* Var. 4. Malacca, *Griffiths.*—Spring gives Sumatra, (*Junghuhn*), as another locality for this species, on the authority of *Dr. de Vriese.*

It is hard to say which of the above published names for this remarkable species should have the preference: three of them are given by different Botanists to the same plant of Cuming (his *n.* 2346.) Spring's work bears the date of 1842-1849, Presl's 1844, and Dr. Hooker's 1845. Spring's is unquestionably the most expressive, particularly for that form which Mr. Cuming detected, which almost exactly resembles the pendent branches of some slender *Casuarina.* But like too many species of the genus it takes other forms, and our *n.* 2. has the leaves of the ultimate or younger branches very much spreading, giving quite a different character to the plant. Dr. Hooker's *L. filicaule* is a pale coloured state, with shorter and flexuose branches.

Fig. 1. Small portion of a plant, var. 1. *nat. size. f.* 2. Portion of a branch. *f.* 3. Capsule and scale :—*magnified. f.* 4. Small branch of var. 2.:—*nat size. f.* 5. Leaves of ditto: —*magnified. f.* 6. Small branch of var. 4.:—*nat size. f.* 7. Leaves :—*magnified.*



Fitch del. et lith.

Fumpin imp.

TAB. LXIX.

LOMARIA VULCANICA, *Blume.*

Rhizomate crasso paleis setaceis crinito, frondibus sterilibus sublonge stipitatis coriaceis lanceolatis ovatis deltoideisve pinnatifidis basi pinnatis, pinnulis approximatis (infimis deflexis) oblongo-ensiformibus subfalcatis acuminatis obtutisve integerrimis v. obscure crenulatis glaberrimis v. costa nervisque pilosiusculis subtus pallidioribus, pinnis fertilibus lanceolatis longe acuminatis pinnatis, pinnulis patentibus lineari-elongatis obtusis acutisve basi dilatatis, involucris laceris, stipite basi crinito.

L. vulcanica, *Blume, Enum. Plant. Jav. fasc.* 2. *p.* 202.

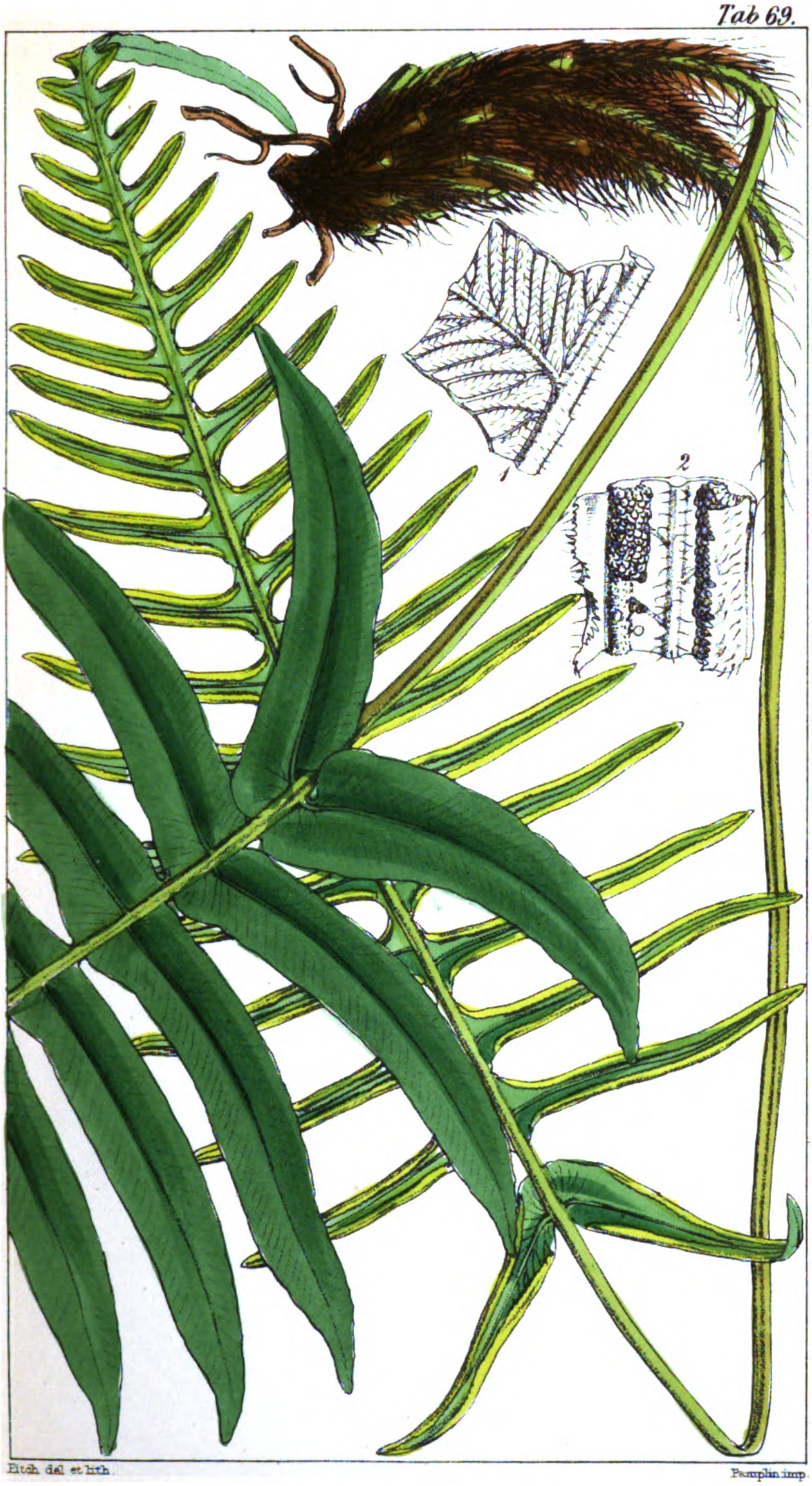
L. deltoides, et L. deflexa, *Colenso in Tasm. Phil. Journ.*

HAB. Tasmania, in mountainous districts, *R. C. Gunn, Esq., n.* 28 and 1522. New Zealand; Auckland, *Sinclair;* Tarawera, *Rev. W. Colenso.* Mt. Gedei, Java, *Blume.*

A very distinct species, common to New Zealand, Tasmania, and the lofty mountains of Java. It is generally readily recognised by the falcate deflexed lower pinnules and deltoid glabrous pale coriaceous frond, with patent linear pinnules; but the frond is sometimes lanceolate, more or less pilose on the under surface, and the lower pinnules are sometimes not at all deflexed. In some of Mr. Colenso's specimens, gathered on dry rocks, the fronds are very small, coriaceous and rigid, and the rhizome an inch in diameter, covered with rigid black shining setaceous paleæ, and with pale scars where old fronds have fallen.—J.D.H.

Fig. 1. Under surface or portion of a sterile frond. *f.* 2. Fertile pinnule, both from a hairy variety :—*magnified.*

Tab 69.



Fitch del et lith.

Pamplin imp.

TAB. LXX.

BLECHNUM LANCEOLA, *Sw.*

Parvum, caudice perbrevi fibroso non raro stolonifero, frondibus simplicibus lineari-lanceolatis anguste acuminatis minute ciliato-scabris nunc basi utrinque auriculatis vel pinnis 2-4 ovatis parvis pinnatis, stipite frondem fertilem subæquante gracillimo sparsim paleaceo.

Blechnum Lanceola, *Sw. K. Vetenskaps Academ. Handl.* 1817. *p.* 72. *t.* 3. *f.* 2. *Hook. Bot. Mag. t.* 3240. *Kunze, Fil. p.* 126. *t.* 57. *f.* 1.

Blechnum lanceolatum, *Raddi, Fil. Bras. p.* 52. *t.* 69. *f.* 3.

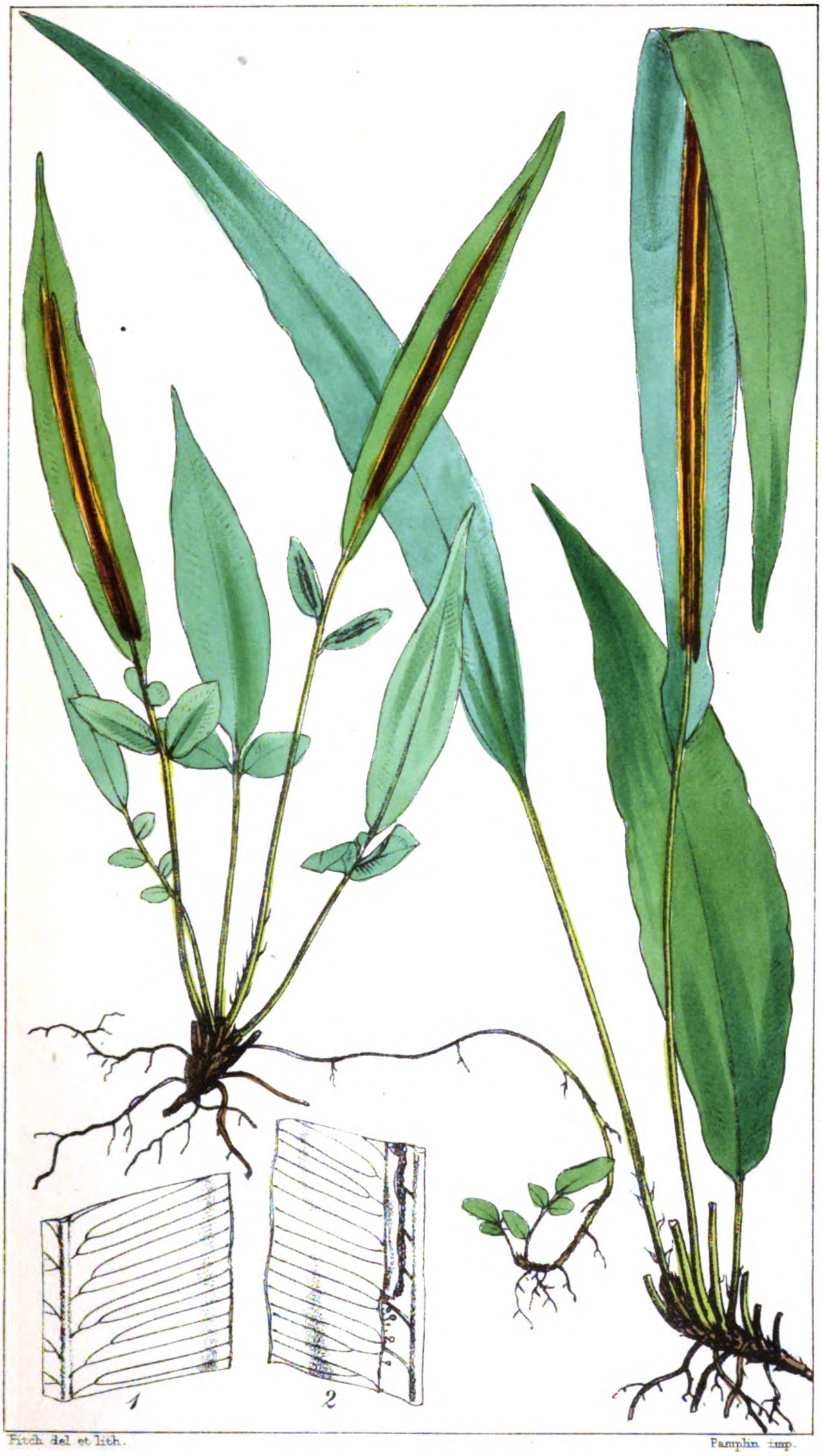
Blechnum trifoliatum. *Kaulf. Enum. Fil.* p. 157.

HAB. Brazil, about Rio, *Raddi, Sellow, Gardner, (n.* 50.*) J. D. Hooker;* Boqueta, Veraguas, *Seemann, n.* 1556.

Notwithstanding the figures above mentioned, this plant has not been satisfactorily and fully represented, because authors have been unacquainted with the pinnated state of it, and even Kunze only knew the divided frond as arising from cultivation, and only as laciniated and auriculated. Mr. Seemann's specimens, however, are mostly pinnated, as represented in our left-hand figure. It is an extremely pretty species, the smallest of the Genus, and was supposed to be peculiar to Brazil till Mr. Seemann detected it in Veraguas, Isthmus of Panama, in 1849.

Fig. 1. Portion of a sterile frond or pinna. *f.* 2. Portion of a fertile do:—*magnified.*

Tab 70



Fitch del et lith.

Pamplin imp.

TAB. LXXI-LXXII.

GYMNOPTERIS SEMIPINNATIFIDA, *Fée*.

Fronde subtriangulari-ovata pinnatifida basi nunc pinnata, lobis pinnisve oblongis obtusis vel acuminatis superioribus in lobum acuminatum magnum sinuatum confluentibus integerrimis v. subdentatis, fertilibus conformibus sed contractis, stipite (fertilis præcipue) longissimo decidue paleaceo.

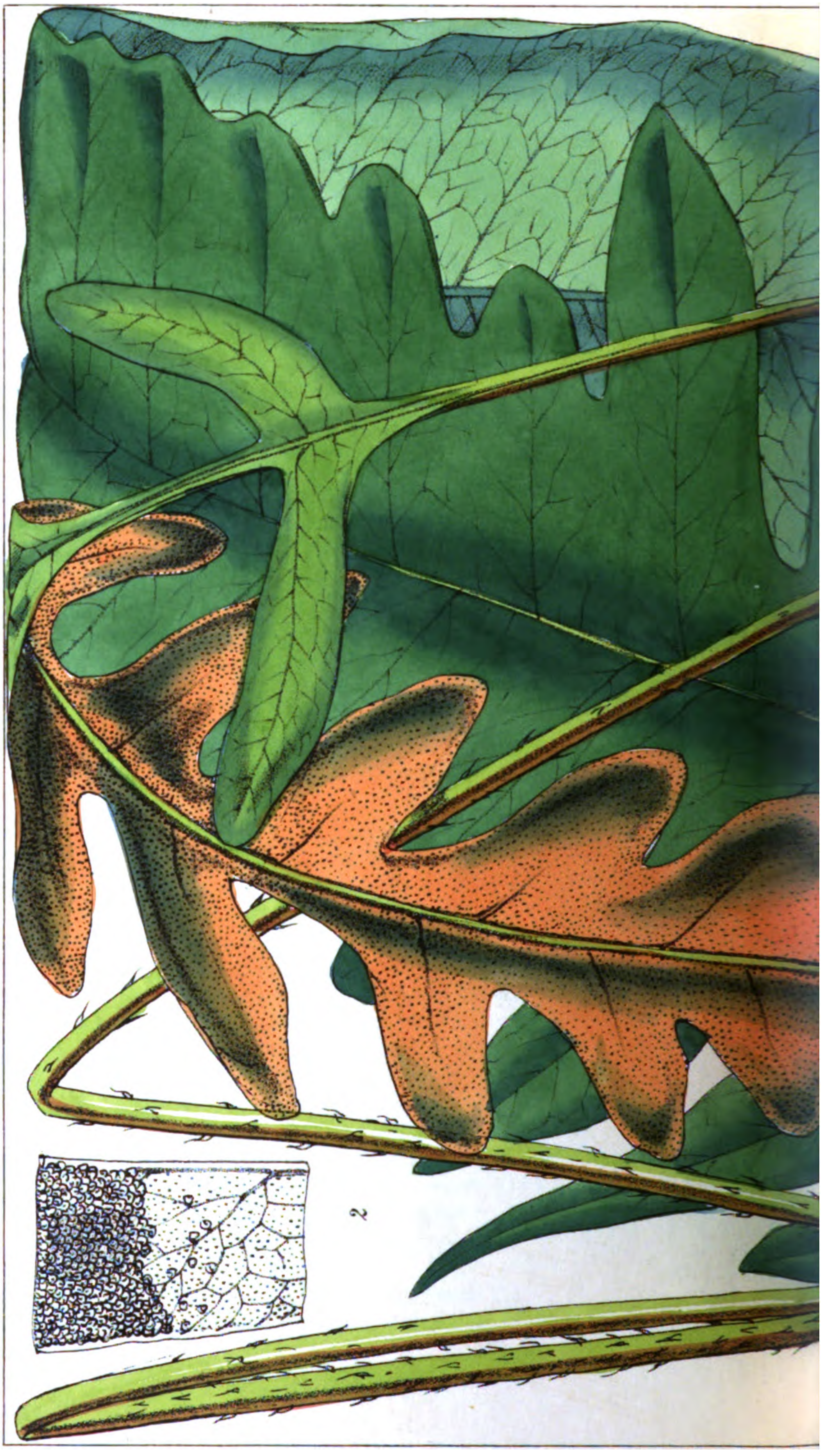
Gymnopteris semipinnatifida, *Fée, Acrost. p.* 84. *t.* 44.

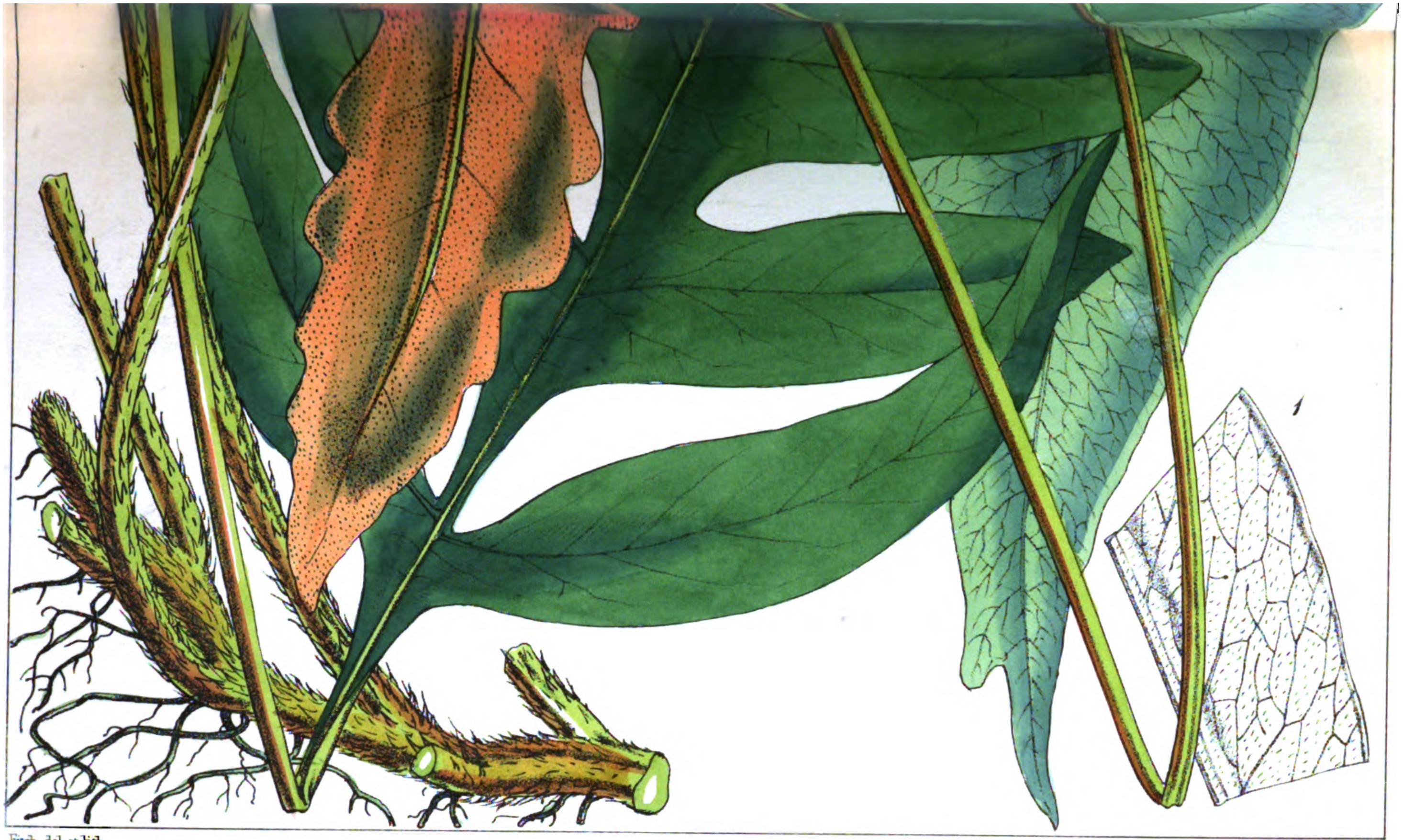
β. fronde basi vix pinnata, lobis infimis decurrentibus, TAB. NOSTR. 71, 72.

HAB. French Guiana, *Leprieur*. *β*. Rocky rivulet in the Serra de Santo Gabriel, Amazon, *Spruce*. (*n.* 2121.)

"Creeping rhizoma, much entangled among stones, so that it was often impossible to extract barren and fertile fronds in conjunction."—The large-fronded species of *Gymnopteris* are extremely difficult to determine without the aid of good figures. We are consequently thankful for the figure, as well as its accompanying description, of *G. semipinnatifida*, that M. Fée has given us in his valuable work on *Acrosticaceæ*. That species, however, he considered remarkable "en ce qu'elle offre sur un même petiole une paire de pinnules trés-courtement pétiolée, qui la fait pinnée, deux ou trois paires intermediares, soudeés vers la base, qui la font pinnatifide; et un sommet seulement ondulé ou sinueux, qui permet de la regarder comme entière." Now in all that concerns this form, our plant agrees; except that the two lowest lobes are not separated from the rest by a wingless rachis; and further, instead of any of the pinnules being shortly petiolate, they are decurrent upon the stipes. Our plant has a near approach to, but not quite, a pinnated frond at the base. As such I can only consider it a form of M. Fée's *G. semipinnatifida*.

Tab 71 . 72.





Fitch del et lith

Pamplin imp.

TAB. LXXIII.

PTERIS (§Litobrochia) ENDLICHERIANA, *Ag.*

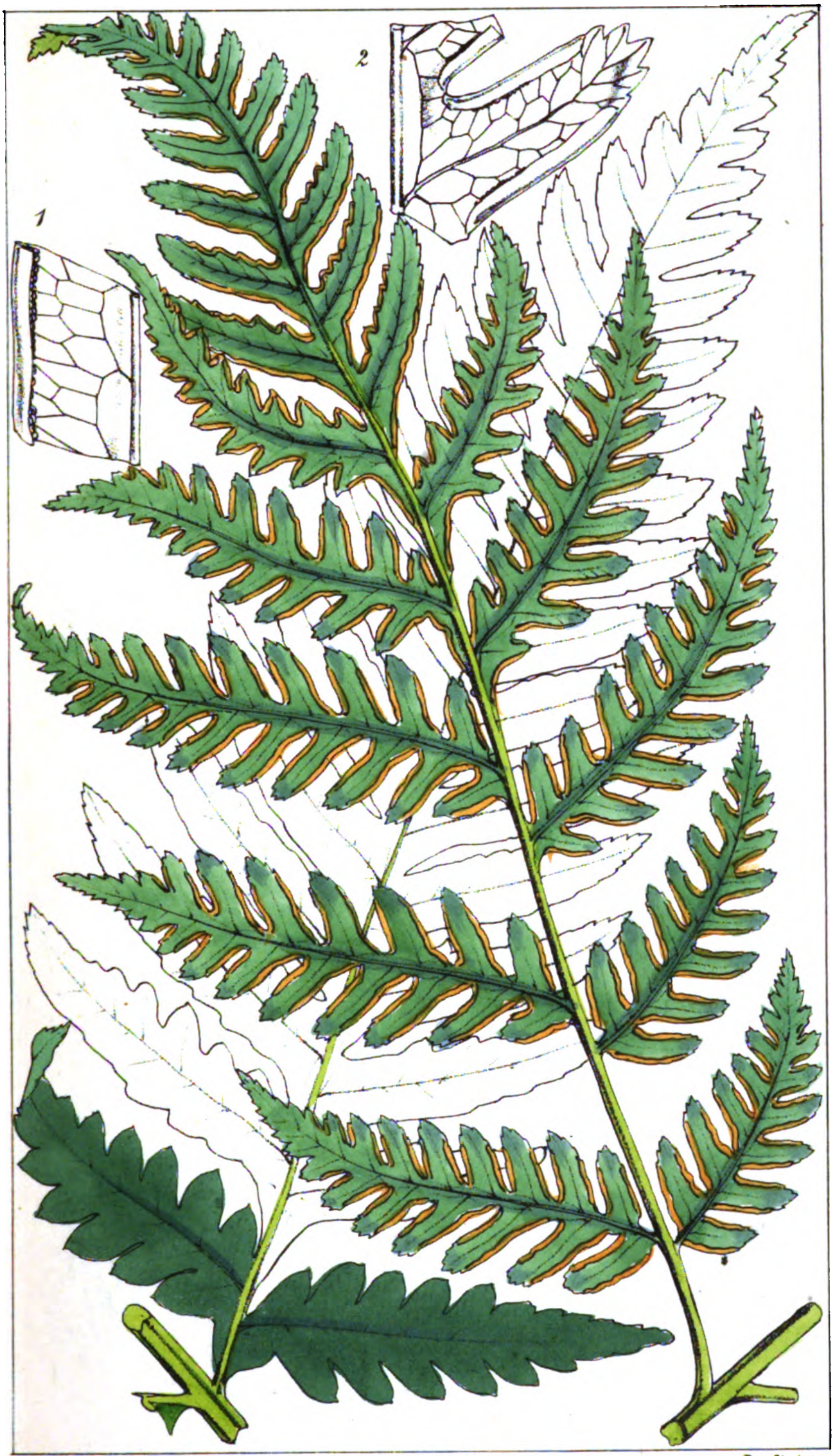
Frondibus (nunc amplis) bi-tripinnatis rigido-membranaceis, pinnis subsessilibus lato-lanceolatis superioribus decurrentibus, supremis coadunatis profunde pinnatifidis, laciniis oblongis acutis subfalcatis apice serratis, sinubus acutis, "venis basalibus (prope costam) monoarcuatis, areis subquartanis marginalibus, stipite elongato rachibusque stramineis." *Ag.*

Pteris Endlicheriana, *Agardh, Recens. Gen. Pterid. p.* 66. *Hook. Gen. Fil. Tab.* 65. B.

HAB. Norfolk Island, *All. Cunningham.* New Zealand, Northern Island, *Dr. Sinclair.* Van Diemen's Land, *R. Gunn, Esq.*

Our friend Agardh has well distinguished this handsome *Pteris*, (*Litobrochia* of Presl), and has founded its main specific character upon the peculiar venation: there is only a single arch between the costulæ, next the costa; and the fourth (or generally the third) areola from the costal one is that which reaches the margin. Agardh's description was made from Norfolk Island specimens in our Herbarium; but the plant has since been found in New Zealand and in Van Diemen's Land.

Fig. 1.-2. Portion of a fertile pinna:—*magnified.*



Fitch del et lith

Pamplin imp.

TAB. LXXIV.

GYMNOGRAMME AURITA, *Hook.*

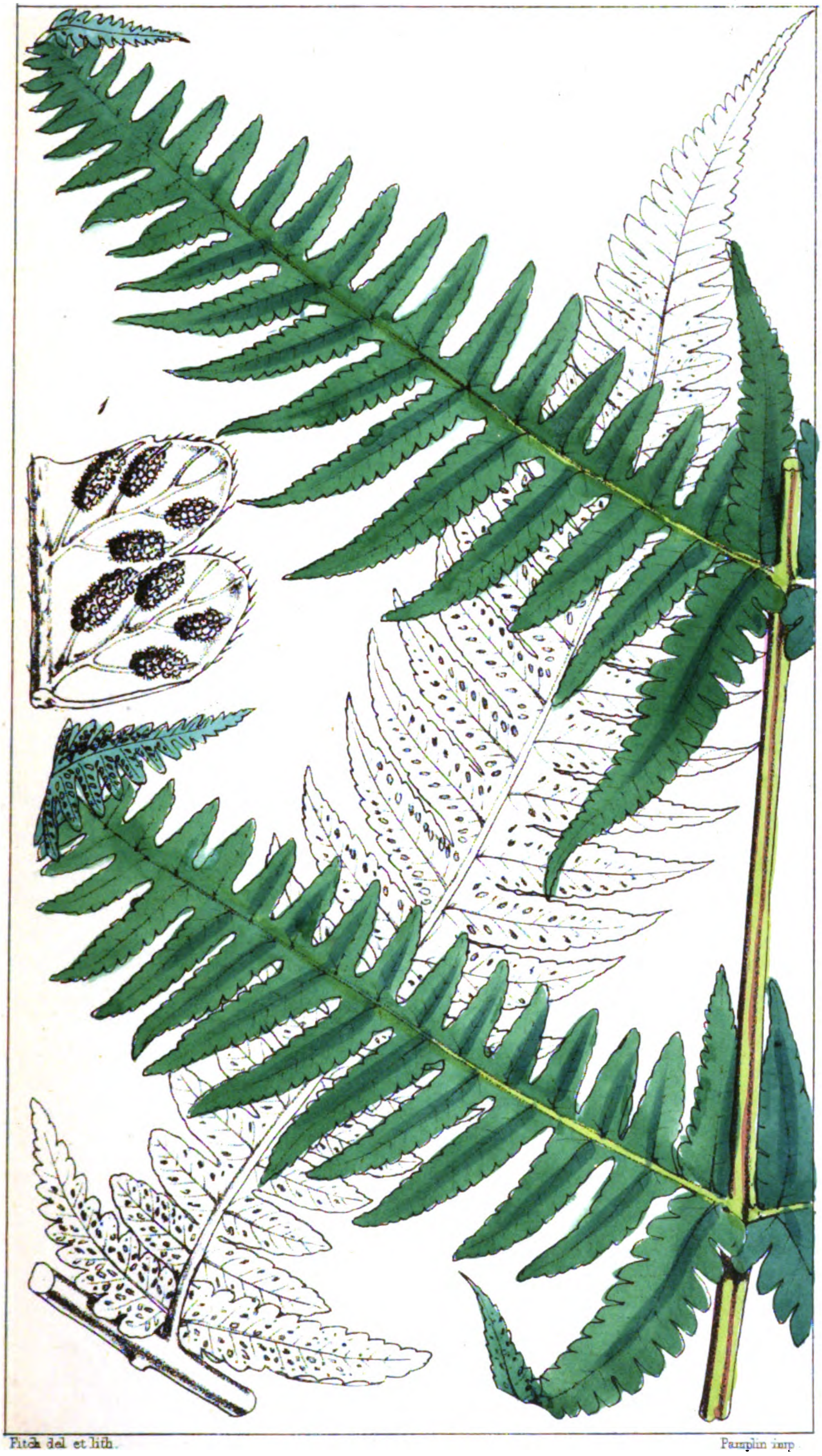
Elata, fronde ovata oblonga acuminata rigido-membranacea pinnata, pinnis remotis sessilibus oppositis e lata basi oblongis acuminatis profunde pinnatifidis, lobis oblongis acuminatis patentibus subcurvatis crenato-lobatis paribus infimis subliberis duplo longioribus subpinnatifidis, venulis simplicibus, soris oblongis breviusculis, stipite elongato, rachibus hirtellis.

HAB. Khasya, *Griffith, Drs. Hooker and Thomson, Thos. Lobb.*

A variable species in its size and in the length and breadth of the pinnules. Fronds one and a half to two feet long, stipes nearly as much, and, as well as the main rachis, rich, glossy, mahogany brown. Rarely I have seen the frond bipinnate, with the pinnæ very much elongated, as if unnaturally drawn up among other plants. The remarkable feature of this species is the large size of the lowest pair of segments or pinnules of the pinnæ, and their being so closely attached to the rachis that their base laps over it. The veins are free, as of the true *Gymnogramme* (Leptogramme, *J Sm.*) The sori are oblong, obtuse, rather short.

Fig. 1. Portion of a fertile pinna :—*magnified.*

Tab 74.



Fitch del et lith.

Pamplin imp

TAB. LXXV.

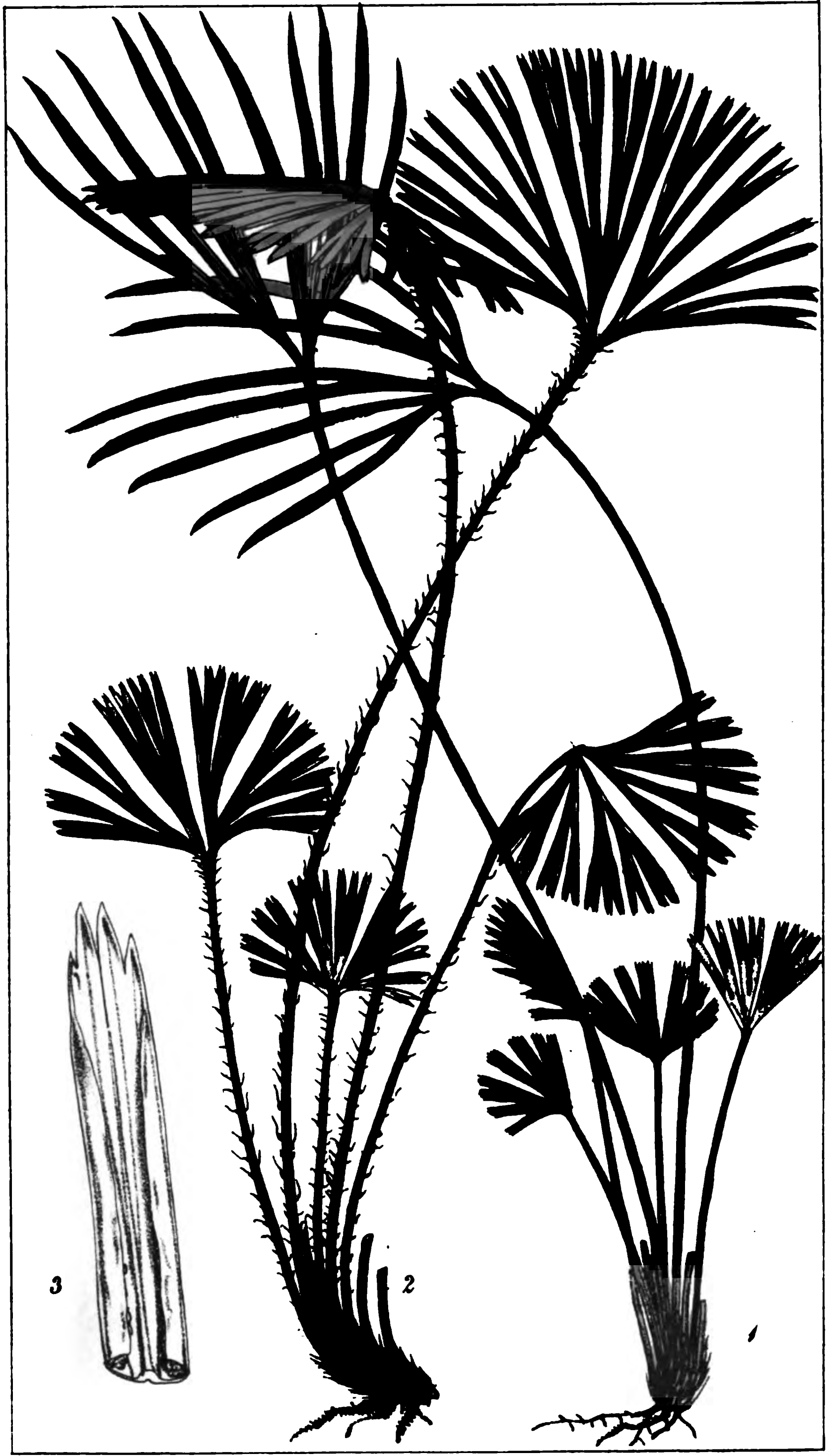
ACTINIOPTERIS RADIATA, *Link.*

Actiniopteris radiata, *Link, Fil. Sp. Hort. Berol. p.* 80.
Asplenium radiatum, *Sw. Syn. Fil. p.* 75. *Sp. Pl.* 5. *p.* 308.
Acrostichum radiatum, *König.*
Acrostichum australe, *Vahl, Symb.* 1. *p.* 84. *t.* 25.
Acrostichum dichotomum, *Försk. Fl. Ægypt.-Arab. p.* 184.
Acropteris radiata, *Fée, Gen. Fil. p.* 76.
Blechnum radiatum, *Presl, Tent. Pterid. p.* 102.
β. frondibus magis elongatis, segmentis paucioribus vix radiatis, apicibus fere omnibus integerrimis subulatis. (See TAB. 76, for synonyms and remarks).

HAB. Arabia, *Förskal.* Upper Egypt and Cordofan, *Kotschy.* South Africa, Macalisberg, *Burke* (in Herb. Nostr.) Madagascar, Bourbon, (*Swartz,*) *Carmichael.* Scinde, *Dr. Stocks.* Bombay, *Dr. Gibson.* Old walls, Madras, common, *Dr. Wight.* (*n.* 109.) *Mr. Gideon Thomson.* Old wall, foot of the Limestone hills, near Segain, Northern India, *Mr. Edgeworth.* Moradabad, *Dr. Thos. Thomson.* Old walls, Agra, and at Sikaan in Ava, *Dr. Wallich,* (*Cat. n.* 137.)

One of the most curious of Ferns, with flabellate leaves like a minute Palm, and these leaves or fronds are often seen quite drooping and pressed down upon the stipes (more so than any of our figures represent them), as if occasioned by a joint, or probably by the effect of drought. The stipites are densely tufted from a fibrous root and often clothed with rather large ferruginous scales at the very base, slender, wiry, two to five or six inches long, with small, patent, deciduous scales. Fronds (in the more common form of which we are now speaking) one to two inches long, and more than that broad, sometimes forming a half circle, many times dichotomous, firm, rigid, glabrous, of a glaucous or pale lurid colour, their ultimate segments linear, 2-3 toothed: the fertile fronds usually but not always longer, less spreading, with fewer but more deeply divided segments tapering to a sharp point and entire or nearly so. The involucre is narrow, linear, fixed to a marginal nerve (which bears the sorus and opening inwards). Nerves strong, dichotomous, following the divisions of the frond.

Fig. 1.-2. Plants, *nat. size. f.* 3. Segments of a fertile frond:—*magnified.*



Fitch del et lith.

Ramphn imp

TAB. LXXVI.

ACTINIOPTERIS RADIATA, *Link*. *β*.

(For figure and description of the usual form of this plant, see our preceding plate, TAB. 75, and description).

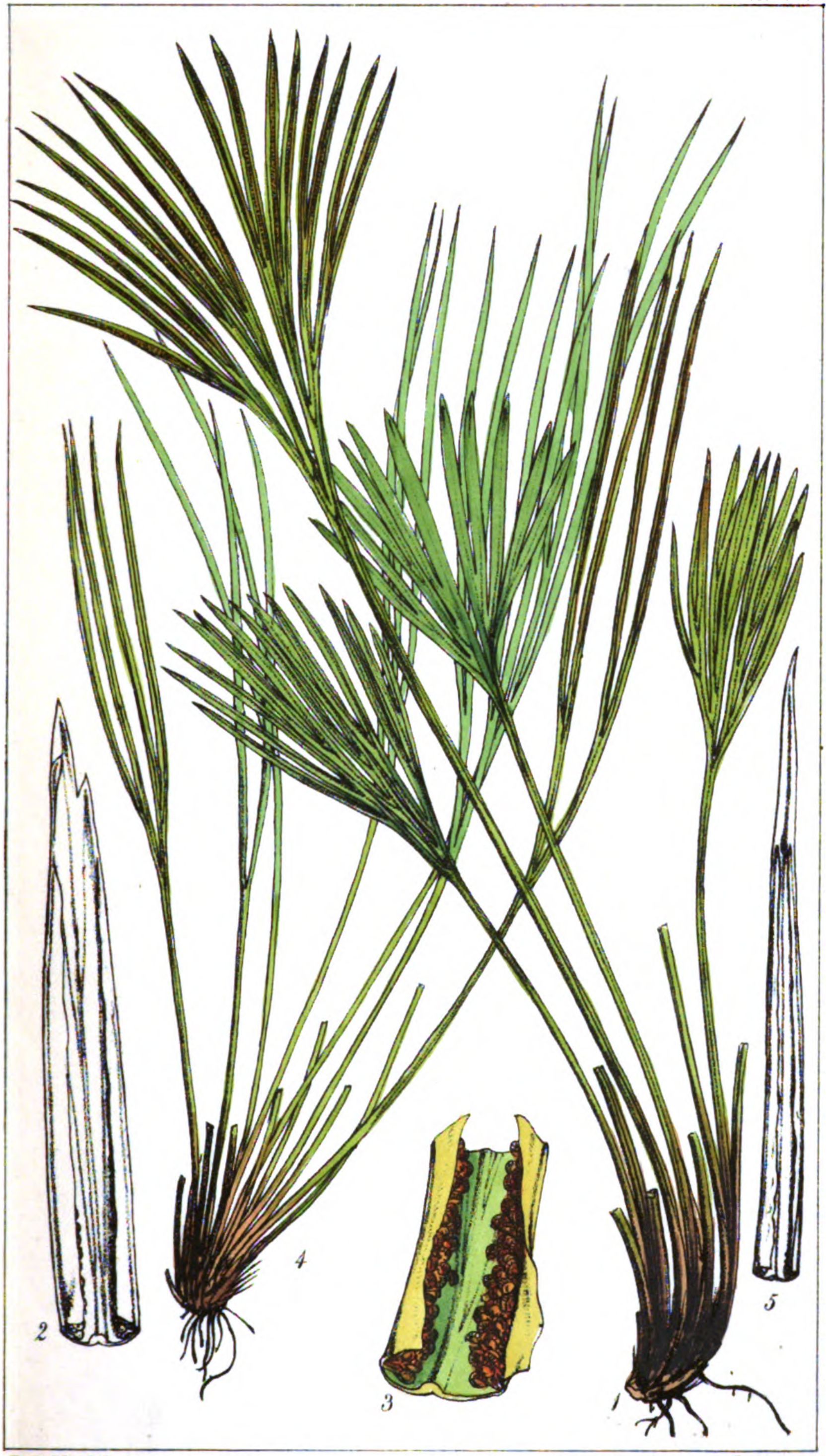
β. frondibus magis elongatis, segmentis paucioribus vix radiatis, apicibus fere omnibus integerrimis subulatis. (TAB. NOSTR. 76).

Actiniopteris australis, *Link, Fil. Sp. Hort. Berol. p.* 80.
Asplenium australe, *Sw. Syn. Fil. p.* 76. *and* 258. *t.* 3. *Willd. Sp. Pl.* 5. *p.* 308.
Acrostichum australe, *Linn. Suppl. p.* 444.
Pteris australis, *Hook. et Grev. Ic. Fil. t.* 8.
Acropteris australis, *Fée. Gen. Fil. p.* 76.
Blechnum flabellatum, *Presl, Tent. Pterid. p.* 103.

HAB. Mauritius and Bourbon, *Sonnerat, Carmichael,* and others. Schoata, near Enderder, Abyssinia, *Schimper, n.* 577.

It requires an extensive suite of specimens, such as perhaps our own Herbarium alone possesses, of this plant, to satisfy oneself that the state of the elegant Fern here figured and that in the preceding plate belong to one and the same species. The extreme forms known to us are given in the two plates now mentioned. At TAB. 75. f. 2. we have one extreme, at our TAB. 76. f. 4. the other extreme; but these are surely connected by the other examples on the same plates. We cannot agree with those Botanists who would retain so remarkable a plant as the present in *Asplenium*, nor yet with those who would unite it with the *Asplenium septentrionale*, (*Acropteris* of Link). The habit and texture and ramification are totally different.

TAB. 76. Actiniopteris radiata, *β*.—*Fig.* 1. Abyssinian specimen from Dr. Schimper:—*nat. size*. *f.* 2. Segments of a fertile frond:—*magnified*. *f.* 3. Smaller portion:—*more highly magnified*. *f.* 4. Specimen from Bourbon, communicated by the Paris Museum. *f.* 5. Portion of a fertile segment:—*magnified*.



Fitch del et lith.

Pamplin imp.

TAB. LXXVII.

ASPLENIUM ADIANTOIDES, *Raoul;*

var. Richardi.

Frondibus oblongis oblongo-lanceolatisve flaccidis rarius rigidis pinnatis bipinnatisve, pinnulis oblongis obovatis rhombeisve basi cuneatis sessilibus v. inferioribus stipitatis varie inciso-lobatis, soris brevibus in pinnulis incisis marginibus lobulorum approximatis marginalibusve, in pinnulis subintegris margine remotis, rachi nuda v. sparse squamata, stipite squamoso basi dense paleaceo.

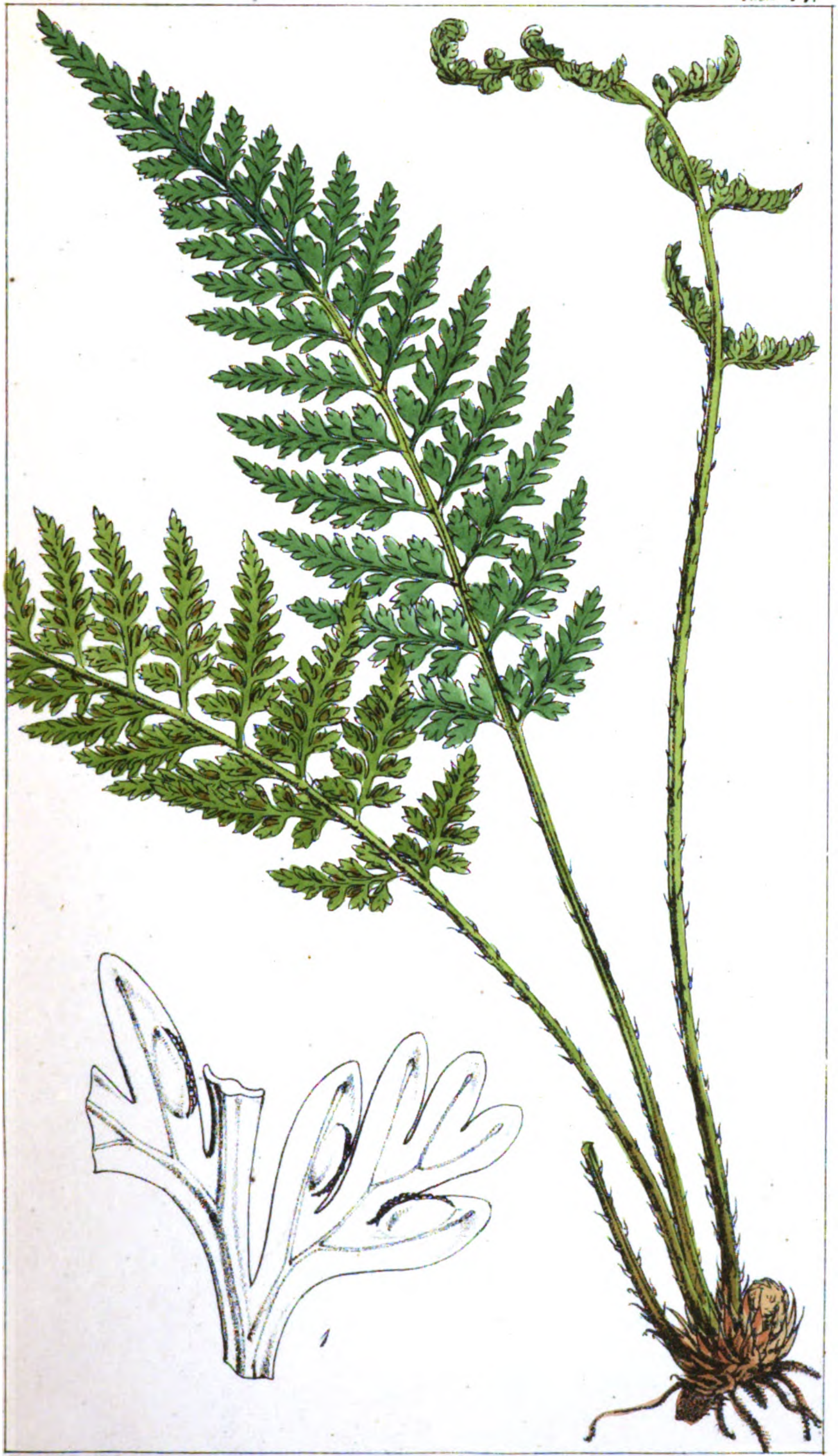
Asplenium adiantoides, *Raoul, Choix des Pl. Nouv. Zel. Tab.* I.

Var. *Richardi*, Hook. fil.; fronde spithamæa erecta subcoriacea bipinnata lanceolata v. lineari-lanceolata, pinnis lineari-lanceolatis erec-topatentibus, pinnulis approximatis brevi-stipitatis sessilibusve obovatis basi cuneatis varie inciso-dentatis lobatis obtusis, soris margine approximatis, rachi nuda v. basi stipiteque sparse paleacea. TAB. NOSTR. 77.

HAB. (*var. Richardi*). New River in the Southern Island of New Zealand, *Hb. beati A. Richard.*

The fern here figured was given to us by our late friend Professor A. Richard, it formed part of a small collection made at the South extremity of New Zealand by the Captain of a French Whaler. Although we have seen no other specimens we have no hesitation in pronouncing it a state of the variable *A. adiantoides*, from the var. *Colensoi* of which (see Plate 84) it differs chiefly in the more coriaceous fronds and robust habit. In these respects it approaches small varieties of *Aspl. flaccidum* and others of *A. bulbiferum*. It is impossible to convey to our readers by a limited number of plates, any idea of the amount of varieties that several of the New Zealand Ferns display. We have selected *A. adiantoides* as an example of a species, all the states of which are rare in herbaria, though most abundant in the cold damp woods of New Zealand. We have received very many specimens of it, and from many localities, and can truly say, both of this and of other species of Ferns, that with the materials, so do the difficulties of discriminating the species increase, and this to so great a degree, that we may confidently predict a great revolution in the whole Order, when complete collections of all states of the widely spread species are studied.—J.D.H.

Fig. 1. Portion of a pinna and pinnules :—*magnified.*



Fitch del et lith.

Pamplin imp

TAB. LXXVIII.

Asplenium (Allantodia) **Brownii,** *Hook.*

Frondibus amplis glabris deltoideis membranaceis bipinnatis, pinnis superioribus oblongis pinnatifidis reliquis iterum pinnatis, pinnulis ovato-oblongis serrato-dentatis, involucris oblongis demum cylindraceo-inflatis tenuibus fragilibus, stipite elongato nudo, rachi flexuosa.

Allantodia australis, ***Br. Prod. p.*** **149.**

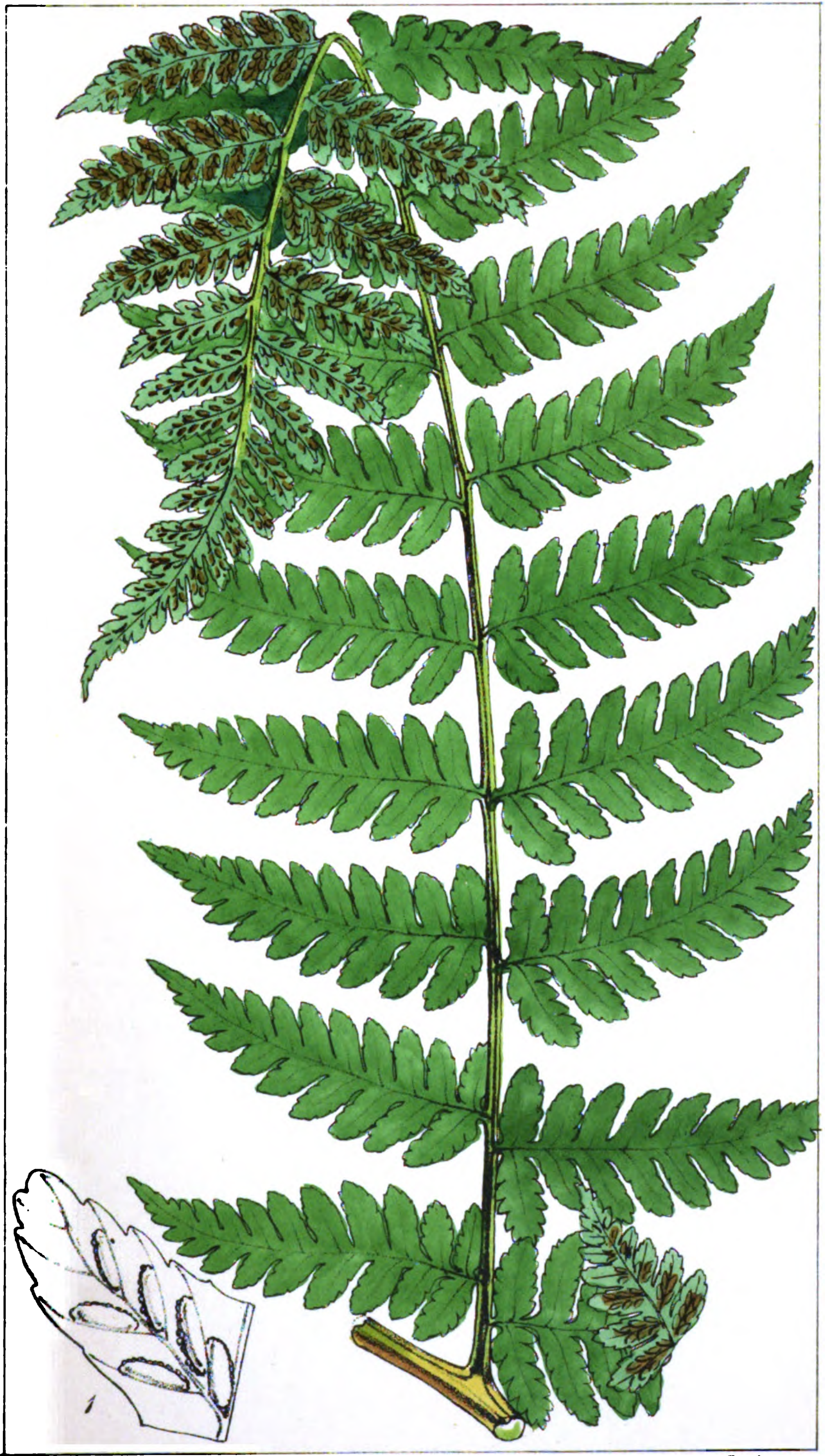
Athyrium australe, ***Presl, Tent. Pterid.*** **98.** ***Fée, Gen. Fil. p.*** **186.**

Hab. Van Diemen's Land, ***Brown, J. D. Hooker, R. Gunn, Esq.*** **New Zealand, Northern Island,** ***Rev. W. Colenso, Allan Cunningham.***

We believe this to be identical, as to generic structure, with the *Polypodium umbrosum,* of Hort. Kew. on which Mr. Brown founded his genus *Allantodia*; and the excellent Link and Kaulfuss unite with him in considering it distinct from *Asplenium,* "Involucro fornicato, e vena lateraliter orto, eaque utroque margine inserto, interiore dehiscente." Presl and Fée, however, unite it with *Athyrium,* and that view is adopted in our Genera Filicum, Tab. xvi. Mr. Bauer's figure there given exactly represents the more mature sori; but I have failed to detect the insertion of the *two margins* of the involucre on the vein. In a young state the involucre is nearly flat, and the outer margin appears to me to be free from any union with the vein. With regard to *Athyrium,* as it stands in Presl and Fée, it is made to contain some species with involucres so little inflated, that it would puzzle any one to say whether *they* should be referred to that genus or to *Asplenium.* "Le port et l'habitude generale" M. Fée observes "les distinguent des *Asplenium,* mais ils s'en rapprochent beaucoup par la nature de l'indusium, surtout lorsque ce tégument est court (abbreviatum)."

Fig. Fertile segment:—*magnified.*

Tab 78.



Fitch del et lith

Pamplin imp

TAB. LXXIX.

TRICHOMANES COLENSOI, *Hook. fil.*

Caudice gracili filiformi elongato, frondibus oblongis acuminatis laxe pinnatis, pinnis subpinnatifidis laciniis brevibus linearibus angustis acutis erecto-patentibus integris vel incisis, involucris solitariis basin versus singulæ pinnæ insertis infundbuliformibus stipitatis liberis, columella longissime exserta flexuosa.

Trichomanes Colensoi, *Hook. fil. mst.*

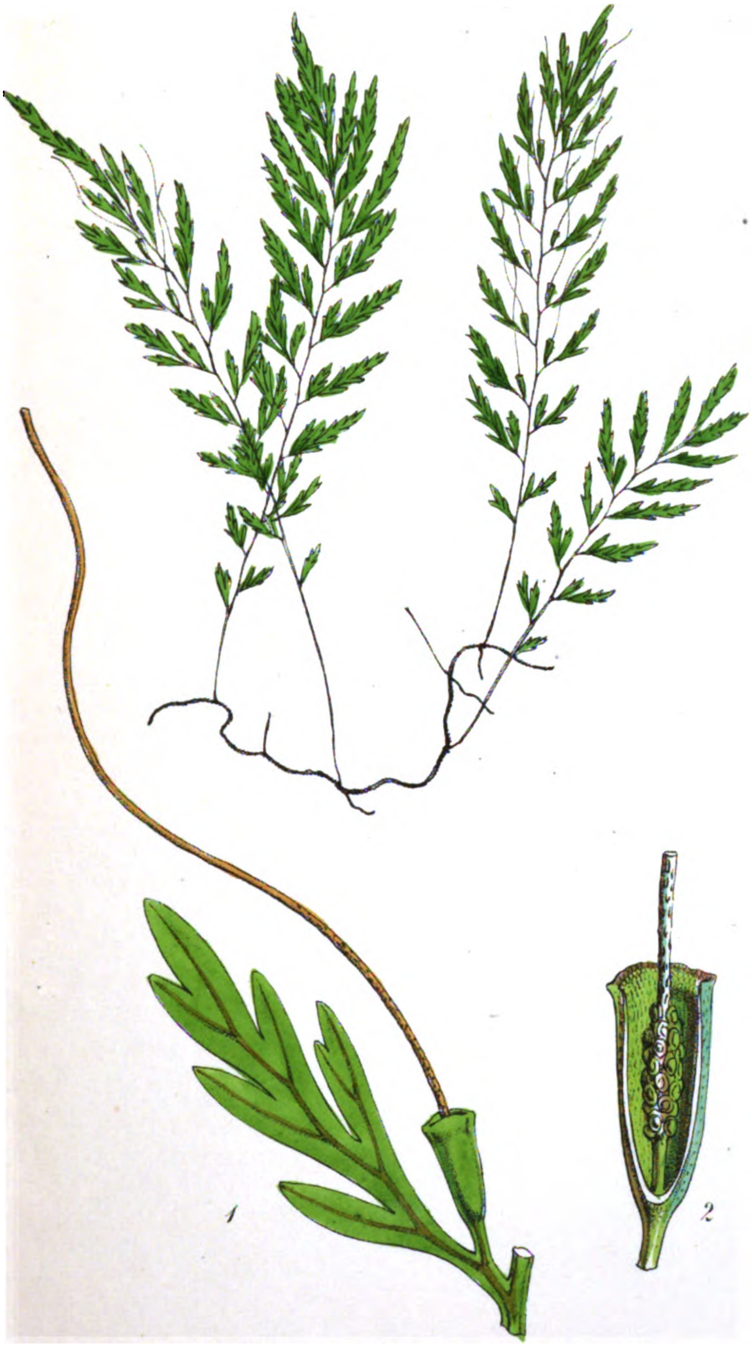
HAB. Interior of the Northern Islands, New Zealand, near Waikare Lake, *Rev. W. Colenso*, *n.* 104.

A very elegant, and as it appears to Mr. Colenso and to me, as well as to Dr. Hooker, an entirely new species. It is very slender in every part, in the caudex, in the rather short stipes, and in the ramifications of the frond. I find only one involucre near the superior base of each pinna, infundibuliform, stipitate, and remarkable for the very long flexuose receptacle or columella, seven or eight times longer than the involucre.

Mr. Colenso writes, "This species of *Trichomanes* was discovered on the deep sides of a dark ravine on the banks of a small rivulet, which meandered through the dense and ever humid forests of the mountainous region between Waikare Lake and Rua Tahuna, in the interior of the Northern Island of New Zealand, where it grows very profusely."

Fig. 1. Fertile pinna of a frond. *f.* 2. Involucre and base of the receptacle with capsules:—*magnified.*

Tab 79.



Fitch del et lith

Pamplin imp

TAB. LXXX.

NOTHOCHLÆNA DISTANS, *Br.*

Cæspitosa, frondibus erectis rigidis subcoriaceis ferrugineo-hirsutissimis lineari-oblongis bipinnatis, pinnis oppositis remotis brevibus subsessilibus erecto-patentibus deltoideo-ovatis obtusis, pinnulis ovato-oblongis inferioribus pinnatifidis superioribus subintegerrimis confluentibus marginibus recurvis subinvolucratis, stipite rachi costisque subtus ferrugineo-paleaceis.

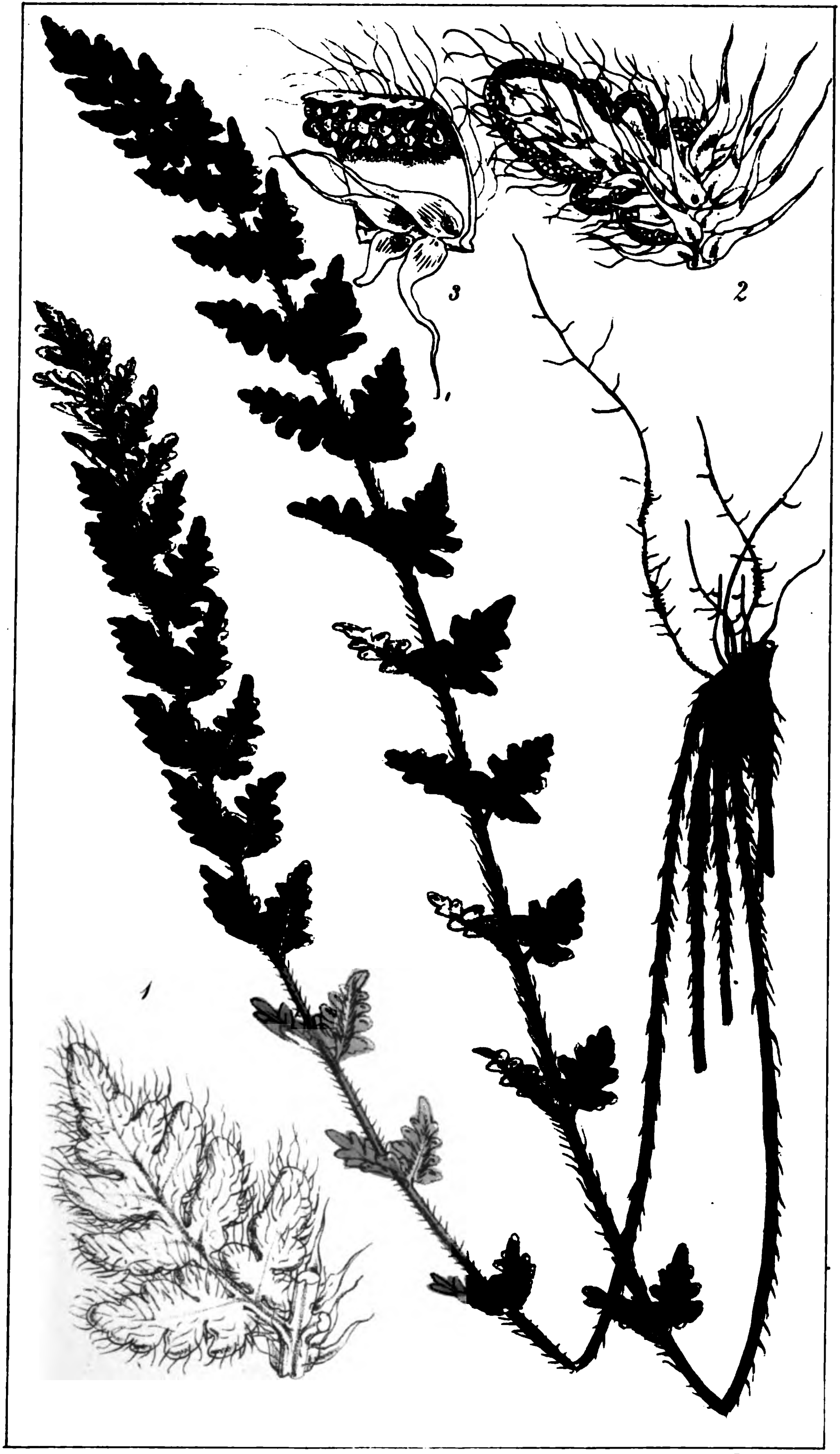
Nothochlæna distans, *Brown, Prod. Fl. Nov. Holl. p.* 146. *Labill. Sert. Austr.-Caled. p.* 5. *t.* 8. *Kunze, in Plant. Preiss.* 2. *p.* 110.

HAB. New Holland; Port Jackson, *Brown.* Logan River, and granite rocks in the Bathurst country, *Fraser.* Port Stephens, *Capt. P. King.* Swan River, *Preiss, Drummond, n.* 8. and 666. New Caledonia, *Labillardière.* New Zealand, Northern Island, *Colenso, n.* 732. 1109. 1914., *J. D. Hooker.*

Kunze justly describes the figure of this species of *Nothochlæna* in Labillardière as "mediocris," the magnified representation being especially erroneous. When a fertile pinna is carefully examined, the margin, pale and almost scariose, will be seen to be recurved and to represent an imperfect involucre, indicating a near approach to some *Cheilanthes*; between which two genera we have already had occasion to observe that the line of distinction is not easy to be drawn. Judging from the copious specimens we have received from New Zealand, from the northern islands at least, the species seems to be of as frequent occurrence there as it is in New Holland; and it is now ascertained to have a very extensive range, from Swan River in the West to New Caledonia and New Zealand in the East.

Fig. 1. Upper side of a pinna. *f.* 2. Under side of a fertile ditto. *f.* 3. Portion of a sorus.—*magnified.*

Tab 80.



Fitch del et lith. Pamplin imp.

TAB. LXXXI.

TRICHOMANES SPRUCEANUM, *Hook.*

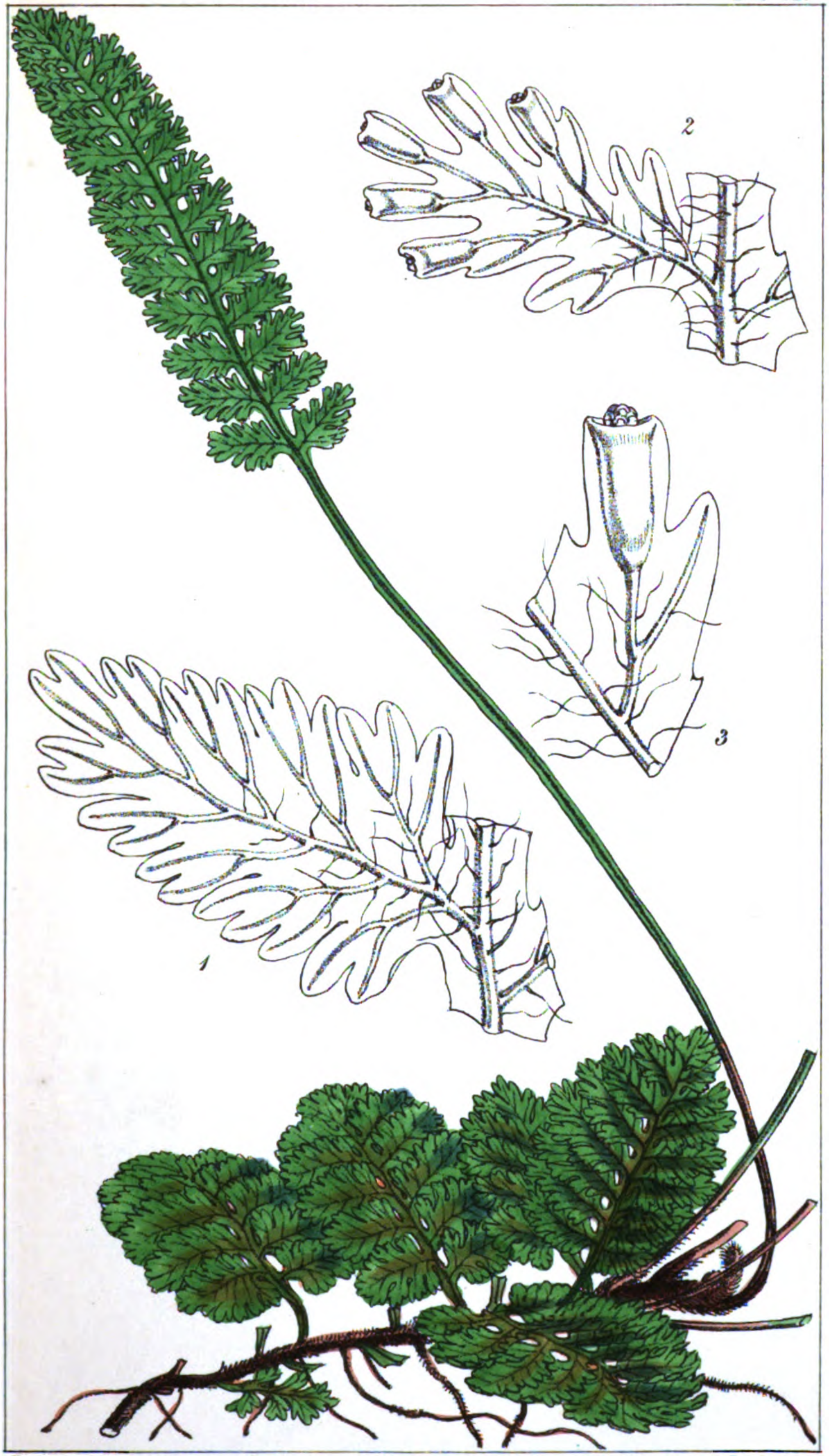
Frondibus difformibus rigido-membranaceis bipinnatifidis, lobis primariis oblongo-ovatis obtusis secundariis bi-trifidis, rachibus subtus longe hirsutis sterilibus brevi-stipitatis latissime ovatis lobis imbricatis, fertilibus longissime stipitatis contractis oblongis obtusis, involucris cylindraceis in loborum apices omnino immersis, columna inclusa, stipitibus alatis, caudice longe repente setaceo-squamoso.

HAB. San Gabriel-catingas, Rio Negro, a tributary of the Amazon, June 1852, *Spruce, n.* 2334.*

No one can fail to see a great similarity between the *Trichomanes heterophyllum*, H.B.K., figured by Kunze, Fil. 2. t. 109. and this; but they are truly distinct: our plant is nowhere pinnate, and the lobes both of the sterile and fertile fronds are very different in form and much more divided; the involucres are different in shape, and the columella is here included. Still the two unquestionably belong to the same natural group, differing from what we call the subgenus "*Hymenostachys*" (see Gen. et Sp. Fil. 1. p. 114), which has a reticulated venation, the involucres arranged in a simple distichous spike, and connate; and from the subgenus *Feea* (*l. c.*) which has the involucres also arranged in a simple distichous spike and the veins all free:—whereas in our plant and in *Tr. heterophyllum,* Humb. the fertile frond is not converted into a spike, but is merely a contracted form of the common frond. In all, the fertile stipes is very much elongated (here beautifully winged), and the sterile one very short.

Fig. 1. Portion of a sterile frond. *f.* 2. Portion of a fertile ditto. *f.* 3. Involucre:—*magnified.*

Tab 81.



Fitch del et lith.
Pamplin imp.

TAB. LXXXII.

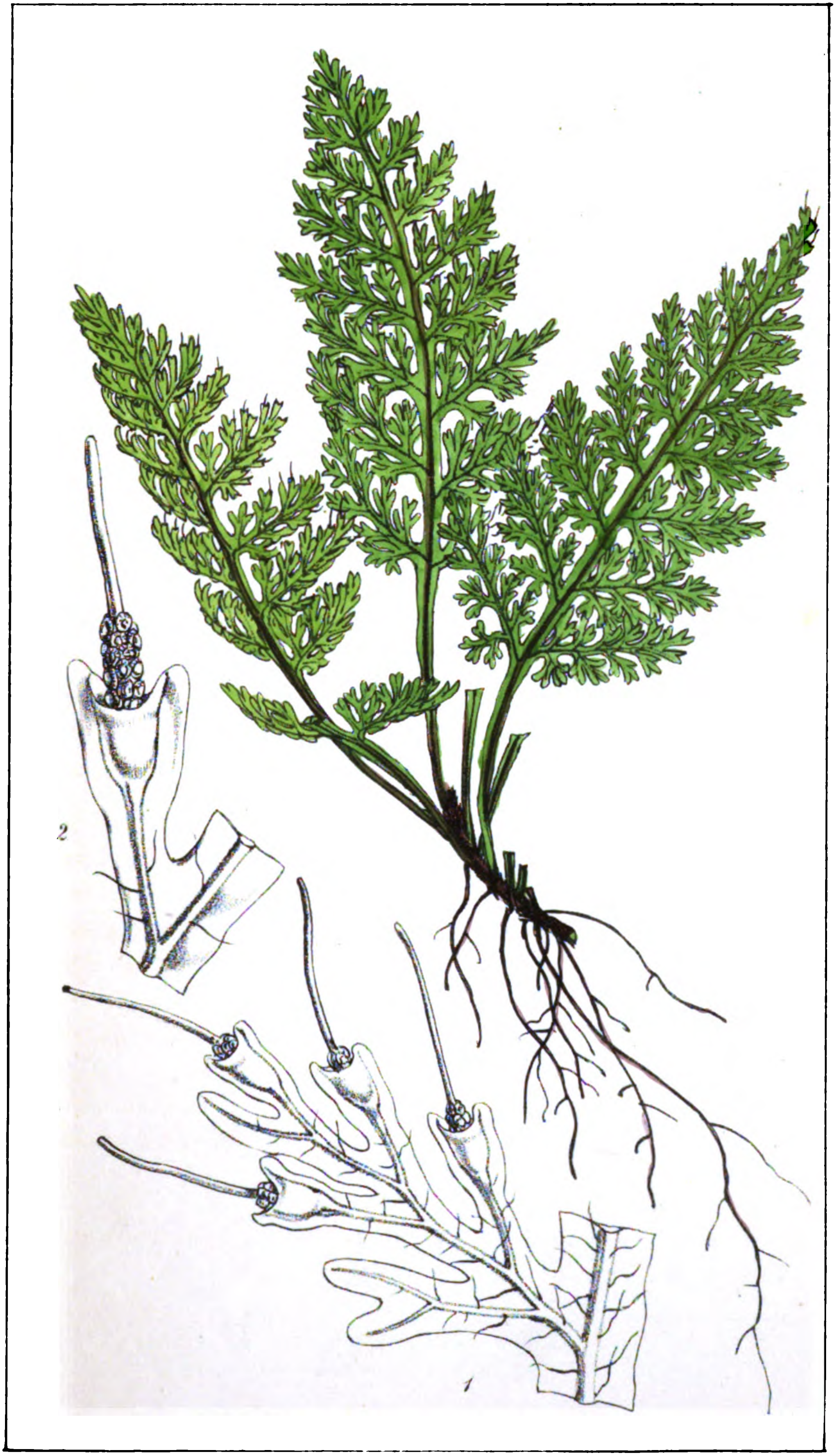
TRICHOMANES BICORNE, *Hook.*

Caudice crassiusculo radicante, frondibus cæspitosis rigidiusculis ovatis seu oblongo-ovatis tripinnatifidis subtus in costam longe sparse setosis, laciniis oblongis integris vel bifidis, involucris copiosis terminalibus obovatis in sinubus bifidis bicornibus segmentorum profunde immersis, receptaculo columellaque longiuscule exsertis, rachi alte alata.

HAB. Barra do Rio Negro, on logs or roots of trees, in dense moist forests, Amazon, (*n.* 1178.) and at St. Gabriel, Rio Negro, frequent on decayed logs on the Catingas, *R. Spruce, Esq.*, *n.* 2334.

This we cannot but consider an entirely new species, in some respects allied to *T. alatum*, Sw., yet considerably different. It is rather short, and firm and compact in its mode of growth, and varies from two to four or five inches high. The costa beneath is beset with dark strongish hairs or setæ. But the remarkable feature is the involucre, which is sunk between the two horns as it were of the apex of a segment, and the apex of the segment and the sides of the mouth of the involucre, forming together, almost the letter V. Both the receptacle of the capsules and the columella are much exserted.

Fig. 1. Fertile portion of a frond. *f.* 2. Involucre:—*magnified.*



Fitch del et lith.

Pauplin imp

TAB. LXXXIII.

ASPLENIUM ADIANTOIDES, *Raoul.*

var. minus. *Hook. fil.*

Flaccidum parvulum, frondibus ovatis ovato-lanceolatisve laxe bipinnatis rarius pinnatis, pinnulis paucis distantibus inferioribus sæpius longe stipitatis rhombeis basi oblique cuneatis crenatis varie lobatisve glaberrimis, soris margine remotis, rhachibus gracilibus parce paleaceis glabratisve, stipite basi squamoso.

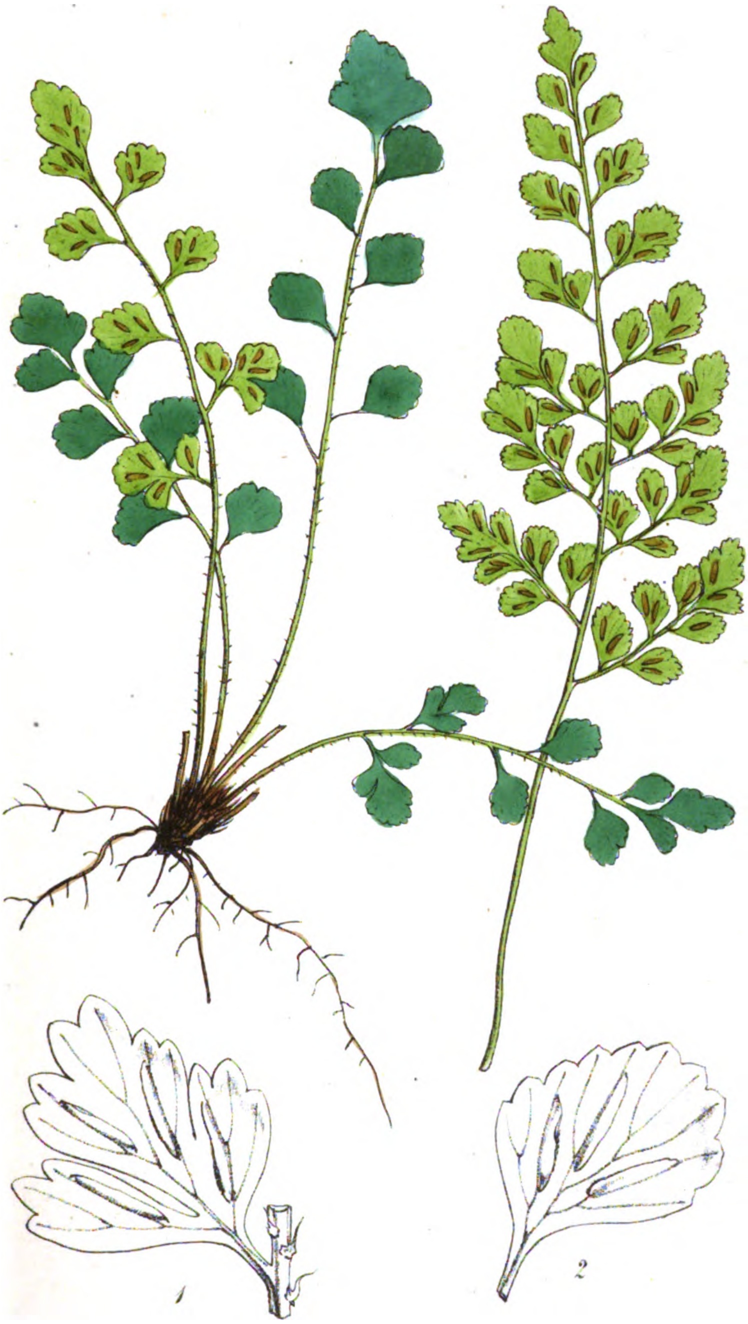
A. Hookerianum, *Colenso in Tasm. Phil. Journ.*

HAB. Northern and Middle Islands of New Zealand, Kerikeri River, *Cunningham.* Banks Peninsula, *Raoul, Dr. Lyall.* Bay of Plenty, East Coast and Interior; *Rev. W. Colenso, n.* 78. 295. 1941.

A very beautiful, but like all its congeners, an extremely variable fern, allied to the elegant *A. Magellanicum* of Fuegia. A very much larger state, a foot long, of this species is figured in M. Raoul's fine work, "Choix de Plantes de la Nouvelle Zelande," TAB. 1. We have taken the opportunity of figuring two other states of this interesting plant in the present work, (Plate 84 and 77) premising that we have little doubt but that they will be raised to specific rank by some Pteridologists, and would have been by ourselves, had we not ample proof amongst our extensive suites of specimens from many parts of the Island of their all being fronds of one species, which is almost as protean as the well known *Asplenium flaccidum,* Forst. Mr. Cunningham's specimens are much smaller than these figured here, simply pinnate, with stalked, 3-lobed or three-partite, very broad pinnæ, ¼–⅓ inch across.—J.D.H.

Fig. 1. Pinnule of pinnate variety, and *f.* 2. Pinnule of bipinnate state of *A. adiantoides var. minus:—both magnified.*

Tab 83.



Fitch del et lith.
Pamplin imp

TAB. LXXXIV.

ASPLENIUM ADIANTOIDES, *Raoul.*

var. Colensoi, *Hook. fil.*

Parvulum suberectum flaccidum v. subcoriaceum, fronde lanceolata laxe bipinnata, pinnis subremotis erecto-patentibus, pinnulis approximatis obovatis inferioribus breve stipitatis varie inciso-lobatis, lobis furcatis integrisve subacutis, superioribus sessilibus inciso-dentatis, soris margine approximatis, rachi costaque glaberrimis, v. costa stipiteque sparce paleacea basi squamata.

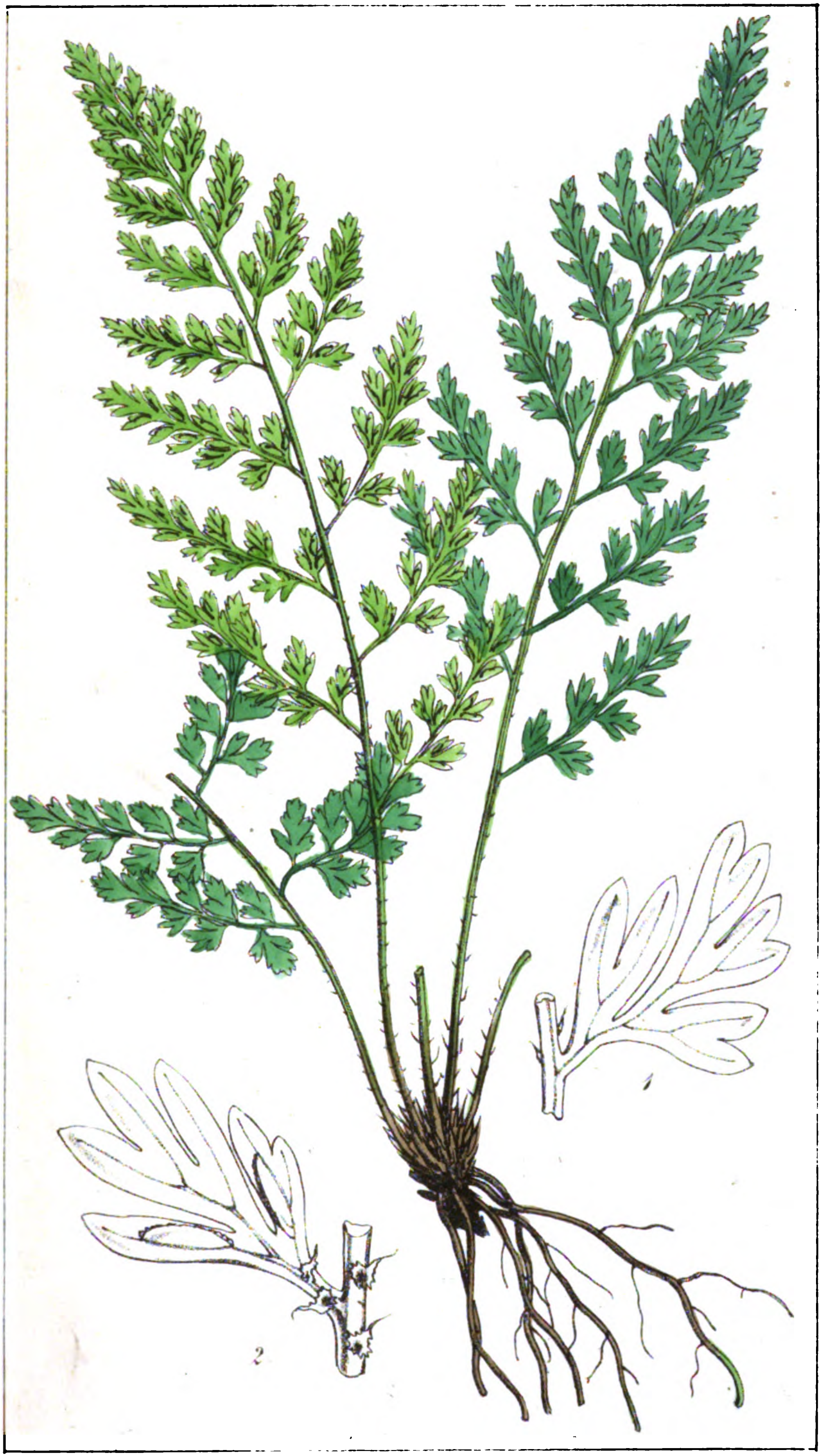
A. Colensoi, Col: in Tasm. Phil. Journ.

HAB. Northern Island, New Zealand, Waikare Lake, and Tuki tuki river, *Rev. W. Colenso, n.* 270.

For other states of this beautiful and variable little Fern we must refer to Plates 77 and 83 of this volume; the present is intermediate in size between the original *A. adiantoides* of Raoul (Choix de Plantes de la Nouvelle Zelande TAB. 1) and his *A. triste,* (which are undoubtedly varieties of one plant), and in the outline and incision of the fronds it is intermediate between our var. *minor* (t. 83) and var. *Richardi* (t. 77).—*J. D. H.*

Fig. 1. and 2. Pinnules :—*magnified.*

Tab 84.



Fitch del et lith

Tamplin imp.

TAB. LXXXV.

CYATHEA CUNNINGHAMI, *Hook. fil.*

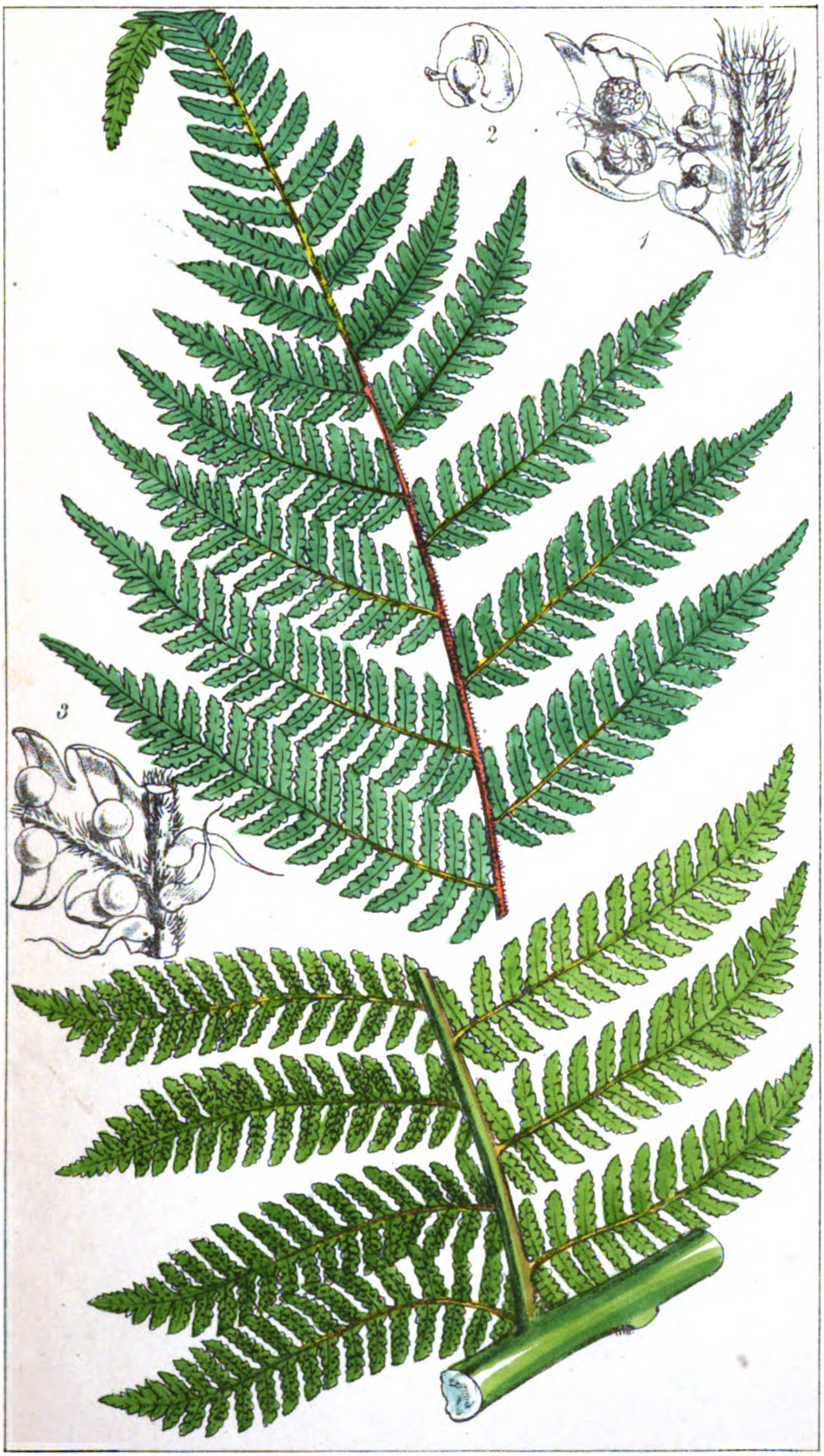
Rachi submuricata, fronde tripinnata flaccida, pinnulis sessilibus lineari-elongatis oblongisve obtusis crenato-v. pinnatifido-lobatis, involucris demum laceris v. oblique cyathiformibus, costa submuricata superne strigoso-pubescente inferne tomentosa et paleacea v. glabrata.

HAB. New Zealand, *Forster*. Wycari river, Bay of Islands, *A. Cunningham*. Mountains of the East Coast and Interior; *Rev. W. Colenso.*

The finest specimens of this beautiful fern that we have seen are Cunningham's, in our friend Mr. Heward's herbarium: Forster's consists of a single pinna in the Hookerian herbarium, and Mr. Colenso's are also single pinnæ. As a species it is intermediate in character between *C. medullaris* and *C. Smithii* (Fl. Nov. Zealand. ined.) differing conspicuously from the former in the flaccid, membranous, pale green fronds, which are more or less strigose along the costa above, and tomentose with mixed palea along both costa and partial rachis below: from *C. Smithii* it is distinguished by the long narrow pinnules. The involucre covers the sorus as a delicate membrane in its youngest state and then bursts irregularly all around, or becoming detached on one side only turns over as a shallow cup which finally becomes reflexed and appressed to the frond, exactly as in *C. Smithii* and in many species of *Hemitelia*: both forms of involucre occur on the same frond. Main rachis rough with minute scattered raised points. Native name "Punui," according to Mr. Colenso.—J.D.H.

Fig. 1. Portion of rachis and pinnule with reflexed involucres. *f.* 2. Involucre and receptacle. *f.* 3. Very young frond and sori:—*all magnified.*

Tab 85.



Fitch del et lith.

Pamplin imp

TAB. LXXXVI.

TRICHOMANES PETERSII, *A. Gray*.

Pusillum, caudicibus filiformibus tomentosis intricato-cæspitosis, frond. 13-,6 lineas longis oblongo-lanceolatis ovato-oblongis v. minoribus late obovatis cuneatisve undulatis majoribus subpinnatifido-sinuatis obtusis glaberrimis (junioribus margine hinc inde pilis nigris 2-3 furcatis ciliatis) penninerviis in stipitem gracilem attenuatis, venis furcatis v. pinnato-ramosis liberis (intramarginali nulla), soro solitario terminali, indusio immerso tubuloso-infundibuliformi, ore dilatato libero leviter bilabiato. *A. Gray*.

Trichomanes Petersii, *Asa Gray, in Sillim. Am. Journ. Sc. and Arts*, 2*d. Ser. May*, 1853. *p*. 326.

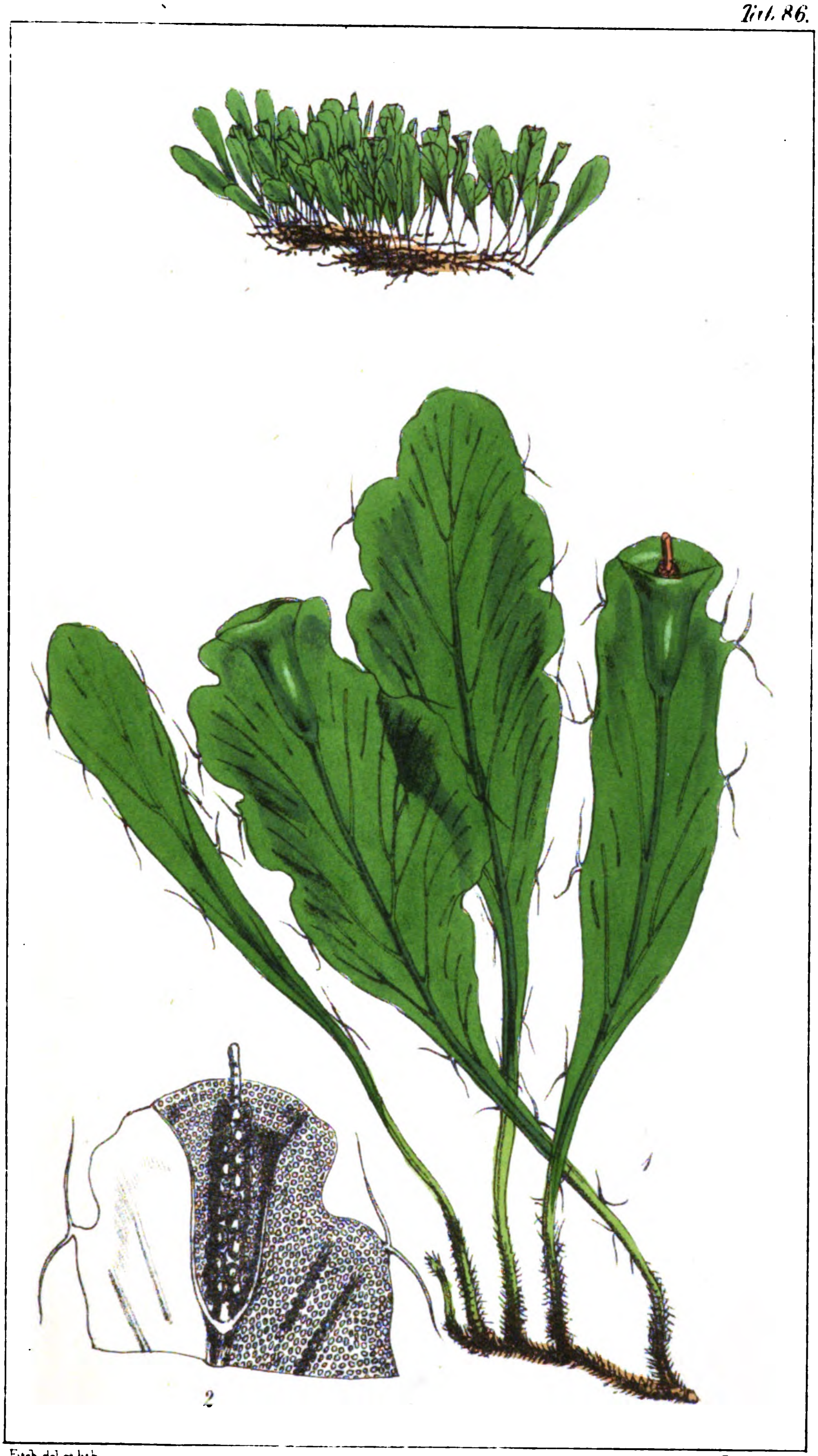
HAB. United States; Hancock County, Alabama, not far from Sipsey river, found only on the face of an insulate sandstone rock, within the reach of the spray of a waterfall, *J. M. Peters, Esq*.

"The fronds, as in *T. muscoides*, are very diverse in shape: the dilated cuneate ones might be taken for the sterile form; but I observe that, more frequently than the narrower fronds, they bear a terminal indusium, which is sterile and empty. There is a peculiarity about the venation, some of the branches of the primary veins being evanescent towards their base, so as apparently to lie free and independent in the frond" (as shown in our figures). "The slender stipes is as long as the frond itself.—It belongs to Hooker's first section of true *Trichomanes*, and of his 2nd sub-division, which contains *T. muscoides*, *T. pusillum*, *T. erosum*, and *T. apodum*. Our new Fern is most nearly related to the first of them (chiefly a West Indian species), having the involucre equally immersed in the body of the frond, (which is not the case with the other species) and the receptacle very short. But the shape of the fronds, their slender stipes and the total absence of an intramarginal vein are abundantly distinctive characters. In the shape of the broader fronds, and in the stellate hairs which sparsely beset the margins, our plant may be likened to *T. reptans*; but that species has a close and flabellate venation, and a cylindrical, exserted involucre, with a deeply two-lipped orifice."

In the above Dr. Asa Gray has left nothing for us to notice, save that the cellular structure of the frond is exceedingly compact, constituting very minute areolæ.

Fig. 1. Fronds *magnified;* and *f*. 2, portion of a fertile frond: *more highly magnified*.

Tab. 86.



Fitch del et lith

Pamplin imp

TAB. LXXXVII.

POLYPODIUM (Drynaria) CONTIGUUM, *Wall.*

Frondibus elongatis lineari-lanceolatis acuminatis marginibus revolutis inferne in stipitem brevem attenuatis subcoriaceis glabris nudis rigidis reticulatim venosis, venis internis obscuris, areolis elongatis subhexagonoideis, venis ultimis liberis divaricatis apice clavatis, soris marginalibus oblongis seriatim dispositis contiguis immersis, capsulis longe stipitatis squamulis stipitatis immixtis, caudice repente squamoso.

Polypodium contiguum, *Wall. Cat. n.* 285.

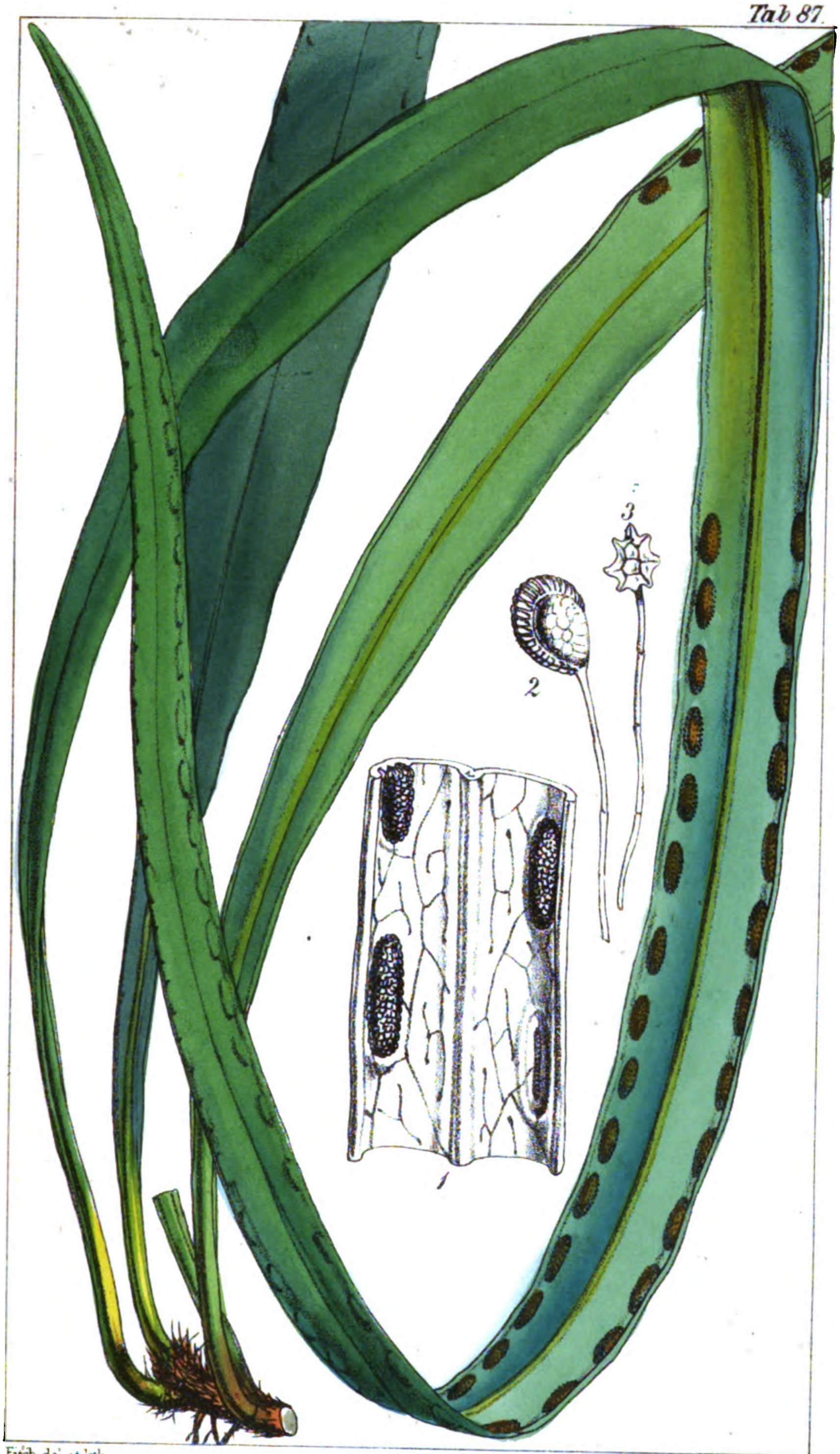
Drynaria revoluta, *J. Smith, Enum. Fil. Philipp. in Hook. Journ. of Bot.* 3. *p.* 491.

HAB. Kamoun, *Wallich.* Mergui, *Griffith.* Luzon, *Cuming, Fil. Philipp. n.* 247. Singapore, *Low.* China, *Fortune, n.* 21.

The natural affinity of this plant is with the *Pleopeltis ensifolia* Carm. (Hook. Exot. Bot. 1. 62). and still more with *Pleopeltis nuda*, Hook. Exot. Bot. 1. 63, now generally placed in *Drynaria* (Phymatodes). §Lepisorus, *J. Sm.*, and we believe that the venation of these will be found sufficiently to correspond: specifically, however, our present plant differs, not only in the great length of the fronds and the marginal situation of the sori, but further in the shape of the sori, approaching to oval indeed in *Pleop. nuda*, here invariably oblong, so as properly to belong to the tribe *Grammitaceæ* of Presl, the receptacle of the sorus being in reality linear. In that groupe I would willingly have ranked it, but that I know of no genus there in which it could with propriety be placed, especially if the venation is considered. The difficulty would be readily solved with some botanists, by making a new genus of it; but we think it of much more importance to illustrate structure with the view to the future consideration of genera, than hastily to form a new genus, which, on further investigation, may be found unsound.

Fig. 1. Portion of a fertile frond, seen from beneath. *f.* 2. Capsule. *f.* 3. Peltate stipitate scale from among the capsules :—*magnified.*

Tab 87.



Fitch del. et lith

Pamplin imp.

TAB. LXXXVIII.

ANEMIA (Euanemia) MEXICANA, *Klotzsch.*

Elata, frondibus (sterilibus) pinnatis, pinnis sub-13 ovato-acuminatis basi obtusis inæqualibus nunc auriculatis patentibus serratis brevi-petiolatis glabris penniveniis venulis dichotomis liberis hinc auriculatis, spicis longe petiolatis pinnatis, pinnis pinnatifidis apice confluentibus (nunc omnibus confluentibus) lobis oblongis capsuliferis, caudice repente stipitique basi squamoso-hispidis.

Anemia Mexicana, *Klotzsch, in Linnæa.* 18. *p.* 526. *Kunze in Schkuhr, Fil. Suppl.* 2. *p.* 75. *t.* 131. *et in Linnæa,* 23. *p.* 223.

A. speciosum, *Presl, Suppl. Pterid. p.* 89.

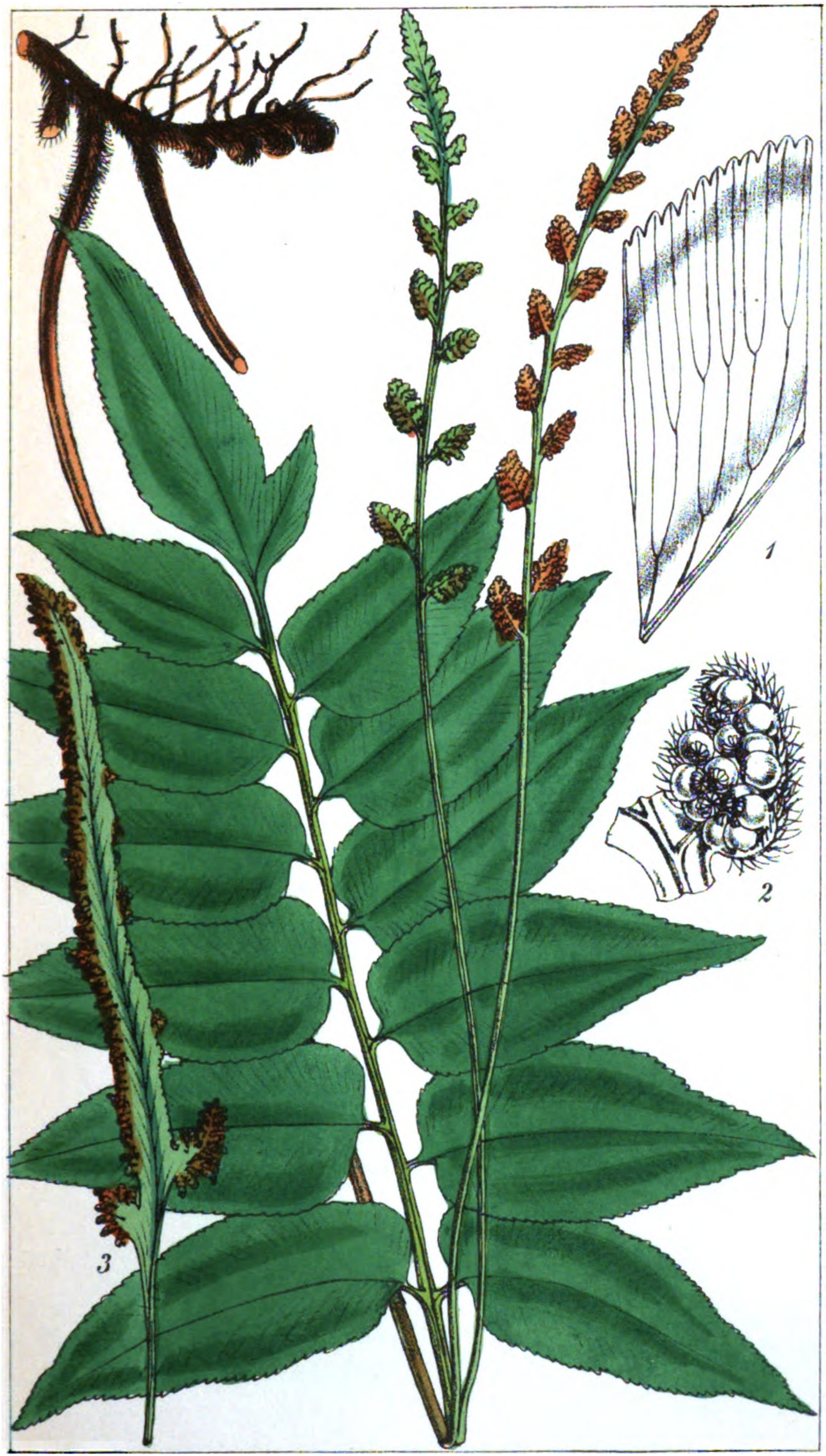
HAB. Western Mexico, *Née, Aschenborn.* Texas, *Lindheimer in Herb. Nostr. n.* 572. Between Western Texas and El Paso, New Mexico, *C. Wright, n.* 826.

Our specimens are from a foot to a foot and a half long, with so much of the habit of *A. Phyllitidis,* that a casual inspection only would induce many Botanists to refer it to that species; but a more careful examination will exhibit a difference in the broad and obtuse base of the pinnæ, and a more remarkable one in the pinnæ being here furnished with dichotomous free veins, whereas in *A. phyllitidis* they are reticulated, as in *A. Tweediana* (Tab. 6.)

Texas is the most northern limit we are yet acquainted with of this genus.

Fig. 1. Portion of a sterile pinna. *f.* 2. Segment of a fertile spike with capsules, seen from beneath:—*magnified. f.* 3. Variety or monstrosity of a fertile spike, seen from above (from Texas, *Lindheimer*):—*nat size.*

Tab 88.



Fitch del et lith

Pamplin imp.

TAB. LXXXIX.

GYMNOGRAMME AURITA, *Hook.*

(Vide TAB. 974).

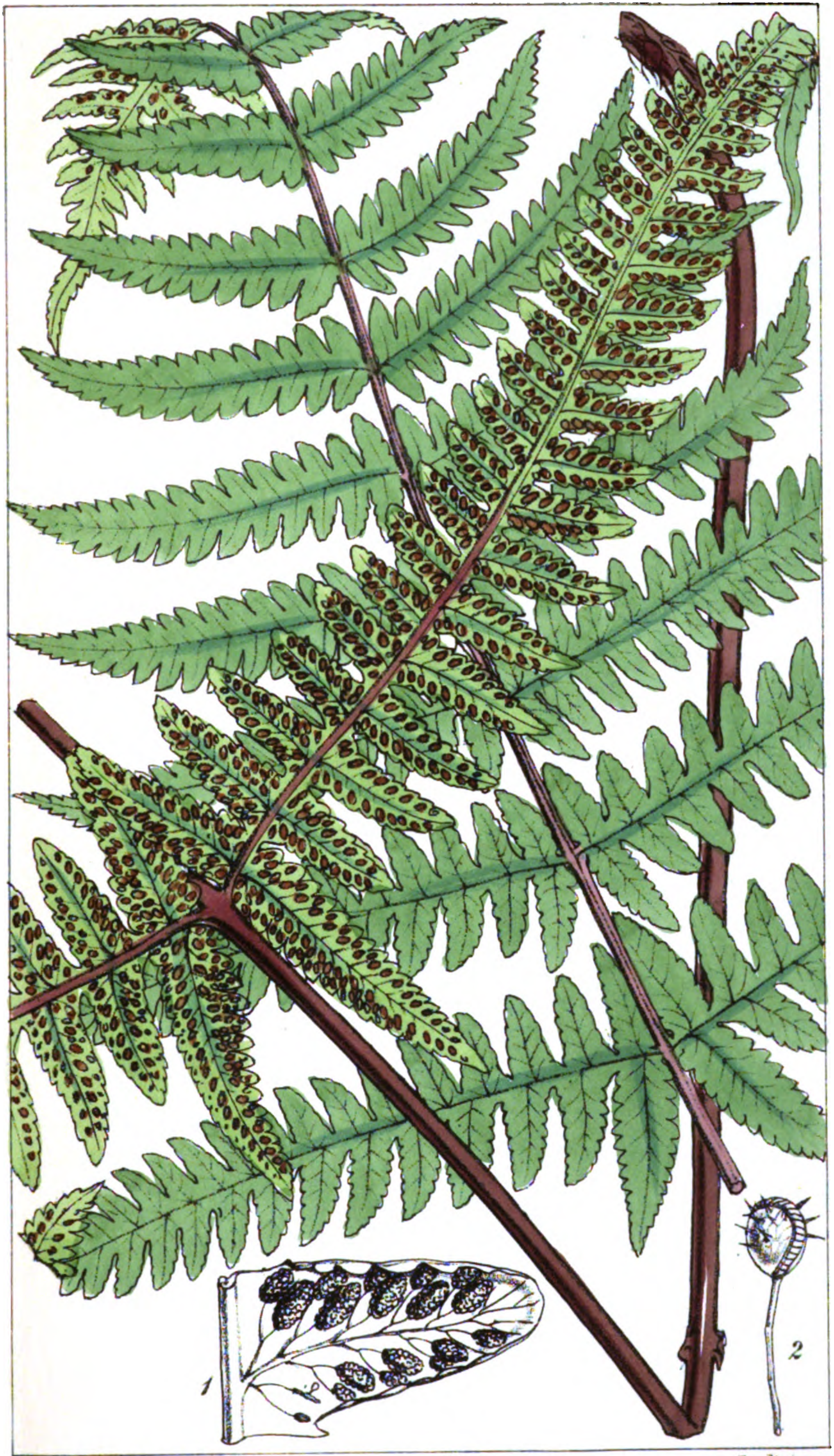
β. frondibus bipinnatis, pinnis magis elongatis, venulis furcatis ramis ambobus soriferis.

HAB. Khasya; Mumbree, and Nuncklow, Eastern Bengal, *Griffith.*

This is a variety to which we alluded in our description under Tab. 74, and which at first sight has the appearance of being different from that species, an opinion that some would consider confirmed by the venules there being simple, here forked, and each branch soriferous, so that there are as it were twin sori:—but after our figure was engraved a more careful examination has led to the conviction that the two are but varieties of one and the same species, of which intermediate grades exist in our extensive suites of specimens. Capsules hispid.

Fig. 1. Fertile segment, seen from beneath. *f.* 2. Capsule: —*magnified.*

Tab 89.



Fitch del et lith.
Pamplin imp.

TAB. XC.

MENISCIUM SALICIFOLIUM, *Wall.*

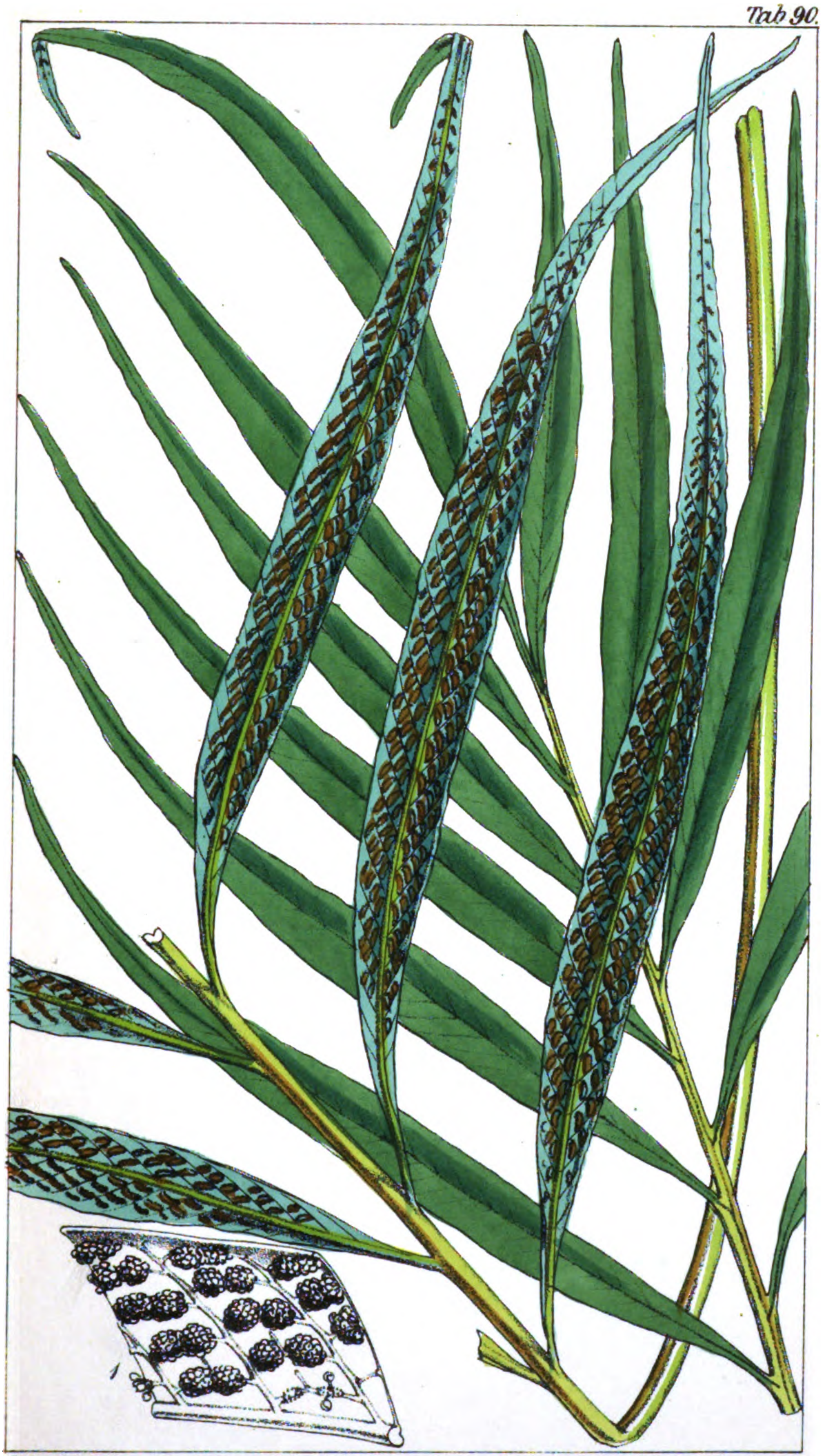
Elatum glaberrimum coriaceo-submembranaceum, fronde pinnata, pinnis brevi-petiolatis lineari-lanceolatis alternis tenui-acuminatis basi attenuatis, costa subtus pallida venisque prominentibus, stipite (spithameo et ultra) costaque nudis.
Meniscium salicifolium, *Wall. Cat. n.* 63.

HAB. Penang, 1822, *Dr. Wallich, Sir William Norris.* Singapore, *Thos. Lobb.*

A fern, so far as I know, peculiar to the two localities above mentioned. It is remarkable for the narrow and very tapering willow-like pinnæ of the frond, certainly in the specific character as given by Willdenow, *of M. angustifolium,* ("frondibus pinnatis pinnis lineari-lanceolatis acuminatis integerrimis, basi angustatis,)" a near ally of that species; but that is a native of South America, from Caracas, and the whole height of the frond is described to be nine inches, the pinnæ three inches long, the stipes 2-3 inches: whereas our plant is 2-3 feet long, the pinna 8-9 inches in length, the stipes more than nine inches. Each transverse veinlet bears two oval sori which soon become confluent.

Fig. 1. Portion of a fertile pinnule:—*magnified.*

Tab. 90.



Fitch del et lith.

Pamplin imp.

TAB. XCI.

POLYPODIUM ERIOPHORUM, *Hook.*

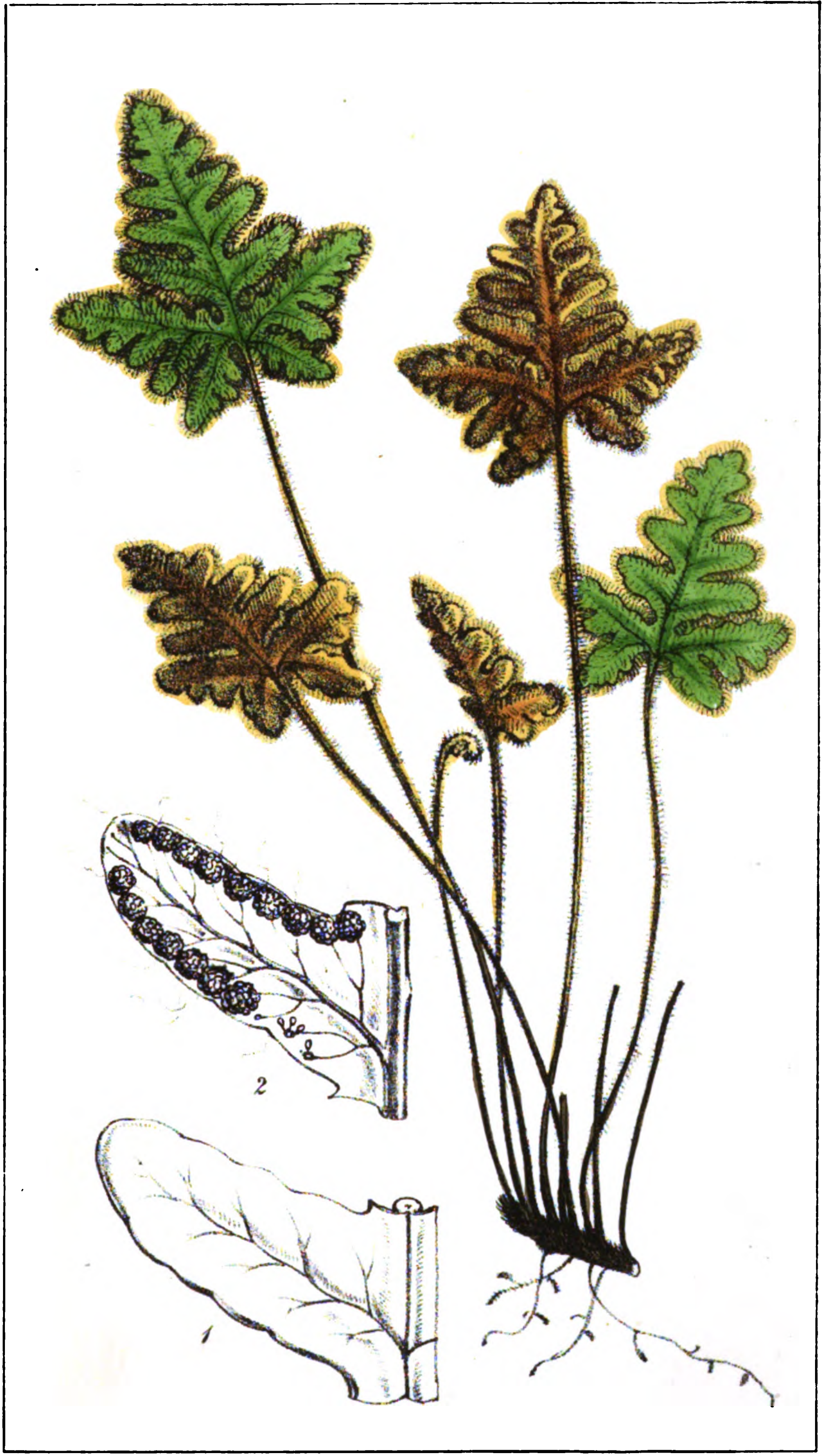
Frondibus cordatis profunde 3-lobis utrinque molliter lanosis, lobis lateralibus semicordatis pinnatifidis lobulis infimis sinuato-lobatis, intermedio triangulari pinnatifido, venulis bifidis apicibus soriferis, soris marginalibus, stipitibus fronde 3-4-plo longioribus lanosis rachibusque nigris, caudice elongato repente nigro-squamoso.
Nothochlæna eriophora, *Fée, Gen. Fil. p.* 159. *t.* 13. *f.* 3.

HAB. Shady clefts, near the city of Oeiras, Brazil, *Gardner, n.* 2390.

M. Fée has examined and figured and described a specimen of this plant; but he has arrived at a different conclusion from myself in regard to the genus. To me it appears to be a true *Polypodium*, bearing as it does globose naked sori at the extremity of the forked veinlets, near the margin it is true, but not "continui, et limbum angustum constituentes." It is clear, however, from his figure above quoted, that M. Fée had only a small and imperfectly developed frond before him. He describes it indeed, "sporangiis remotis," and figures only one or two capsules at the extremity of each veinlet; whereas the capsules in our specimens are very copious from each receptacle, forming approximate sori, but not a continuous line, so copious in the older specimens, so much extended over the disk among the copious, lax, woolly hairs, (partially concealing them), that our lamented friend Mr. Gardner distributed his specimens under the name of *Hemionitidis sp.* The wool is of a tawny hue.

Fig. 1. Upper side of a lobe, and *f.* 2. Under side of a fertile lobe, the wool having been removed:—*magnified.*

Tab 91



Fitch del et lith

Pamplin imp.

TAB. XCII.

GYMNOGRAMME SCHOMBURGKIANA, *Kze.*

Parva fasciculata, frondibus oblongis obtusiusculis chartaceis nitidis bipinnatis inferne subtripinnatis, pinnulis plerisque obovato-cuneatis ovalibusve inciso-lobatis convexis, sterilibus pilis paucissimis solitariis in venas, fertilibus subtus in venas copiose pilis longis hispidis, venulis dichotomis apicibus clavatis, soris oblongis laxis, stipite elongato rachique primario ebeneis nitidis, rachibus secundariis alatis, caudice nodoso parvo.

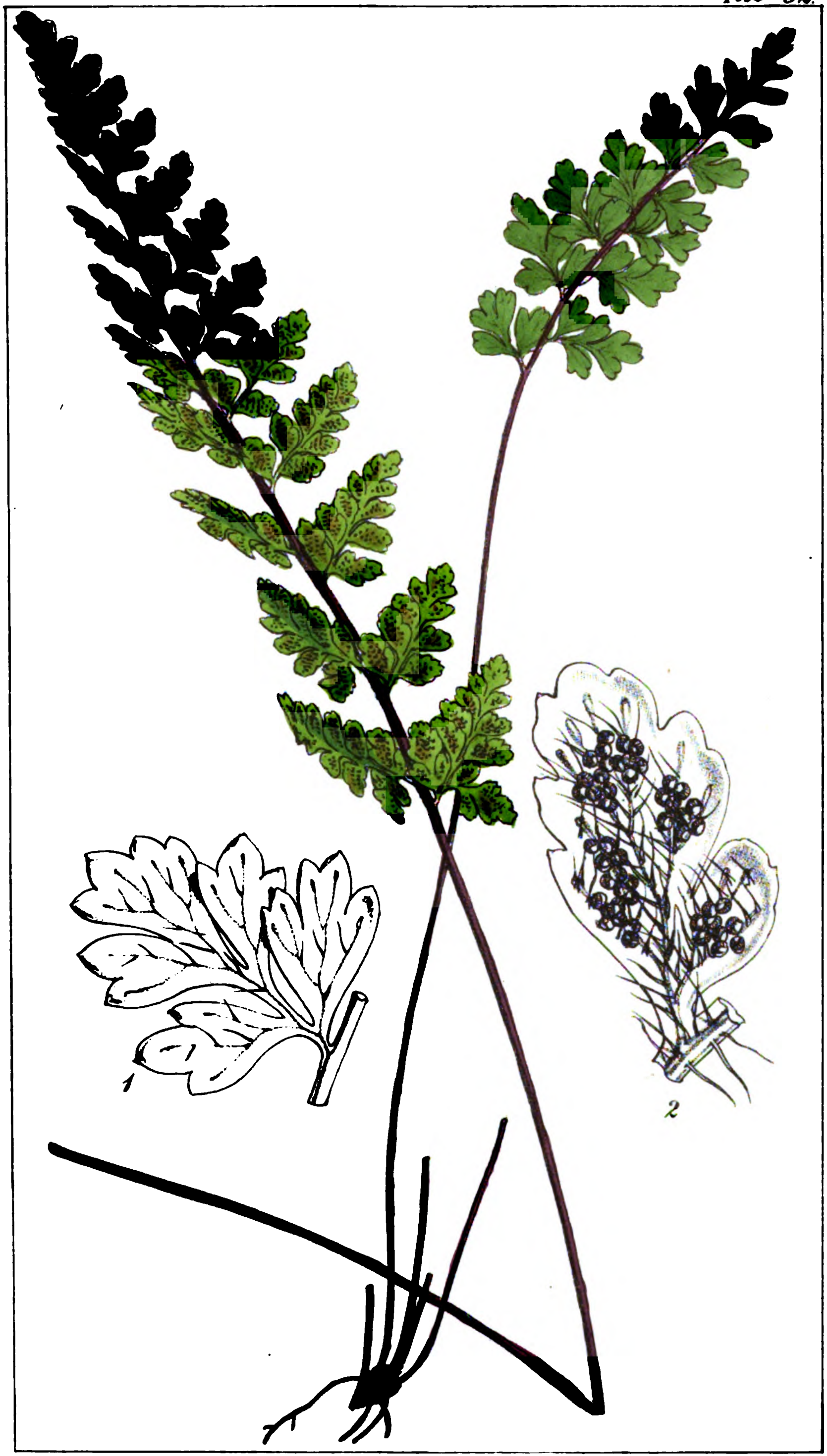
Gymnogramme Schomburgkiana, *Kunze*, (*Klotzsch in Herb. Nostr. n.* 1196).

Anogramme Schomburgkiana, *Fée, Gen. Fil. p.* 184. (*name only*).

This pretty species is only known to me by the specimens here figured, kindly sent by Dr. Klotzsch. M. Fée quotes Kunze MSS, as his authority for the name, and I presume it has not been yet anywhere published. The whole plant is very glossy: the texture is firm, and in a dry state at least the anterior surface of the pinnæ is convex. Only a very few scattered solitary hairs are seen on the sterile frond, but the underside of the fertile ones is copiously hispid with long hairs on the veins beneath and among the capsules. The veinlets all terminate considerably within the margin and are there clavate.

Fig. 1. Sterile pinnæ, seen from above. *f.* 2. Fertile pinnæ, seen from beneath:—*magnified.*

Tab 92.



Fitch del et lith
Pamplin imp.

TAB. XCIII.

Lastrea Borneensis, *Hook.*

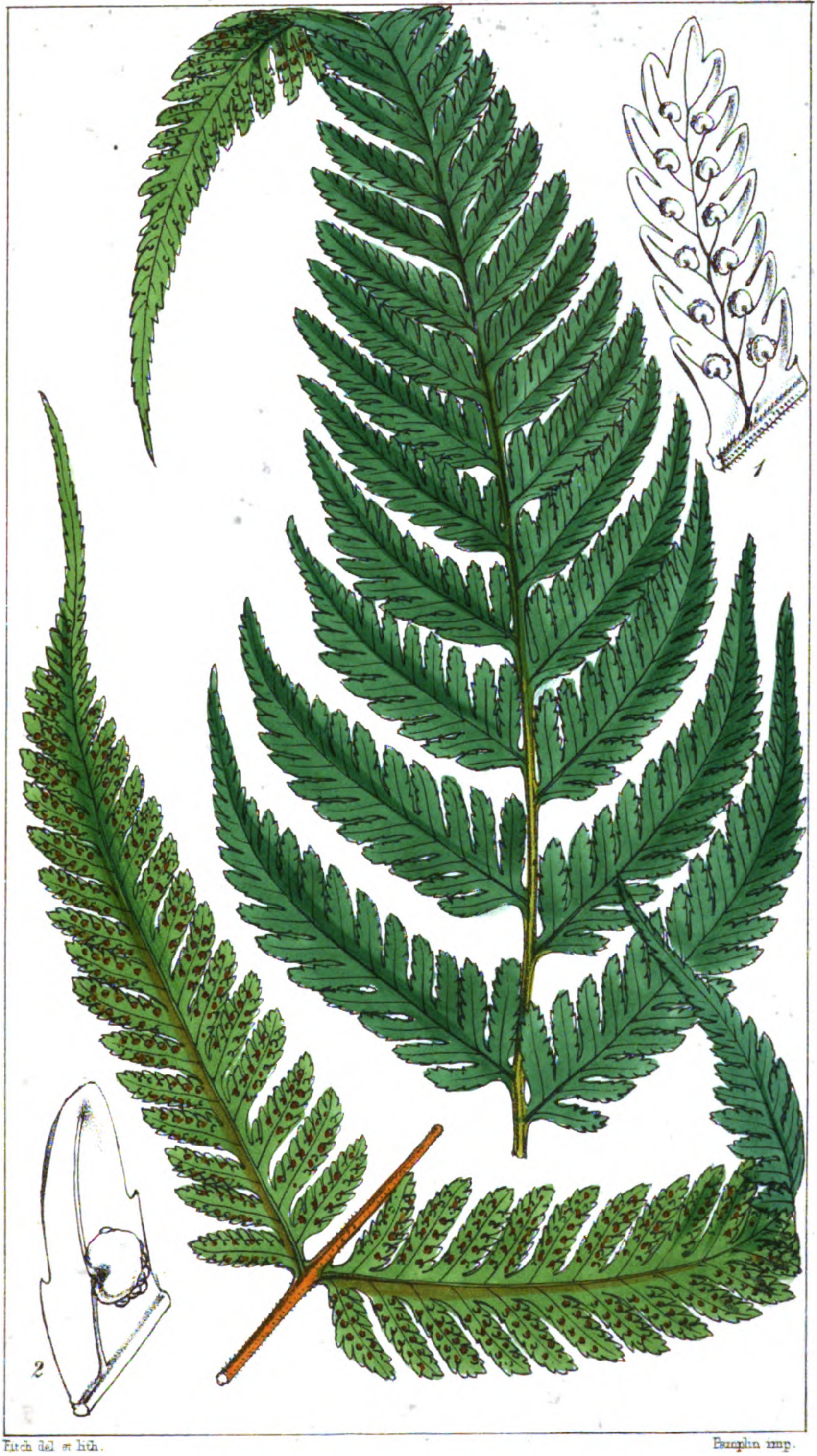
Fronde pinnato-pinnatifida (an bipinnata?) acuminata membranacea glabra, pinnis lanceolatis inferioribus longe anguste acuminatis profunde pinnatifidis, lobis oblongis acutis pinnatifido-serratis, lobulis serraturisve obtusiusculis, soris in medio venularum, involucris reniformi-orbicularibus venam centralem spectantibus, rachibus costisque pubescentibus.

Hab. Borneo, near Sarawak, *Thos. Lobb.*

I possess only a portion, it would appear, of this frond, at any rate no stipes nor caudex; and in general form this has affinity with many species of this extensive genus. There is however, a peculiarity in the direction of the involucres, which strikes me as being unusual. The veinlet on which the involucre is placed forms an angle at or near the middle, and from that angle the sorus and involucre appear to spring, and the latter is not directed towards the apex of the lobule following the direction of the veinlet, but is free from it and has an oblique direction towards the main or central vein.

Fig. 1. Under side of a lobe with sori. *f.* 2. Single sorus: —*magnified.*

Tab 93.



Fitch del et lith.

Bamplin imp.

TAB. XCIV.

TÆNITIS OBTUSA, *Hook.*

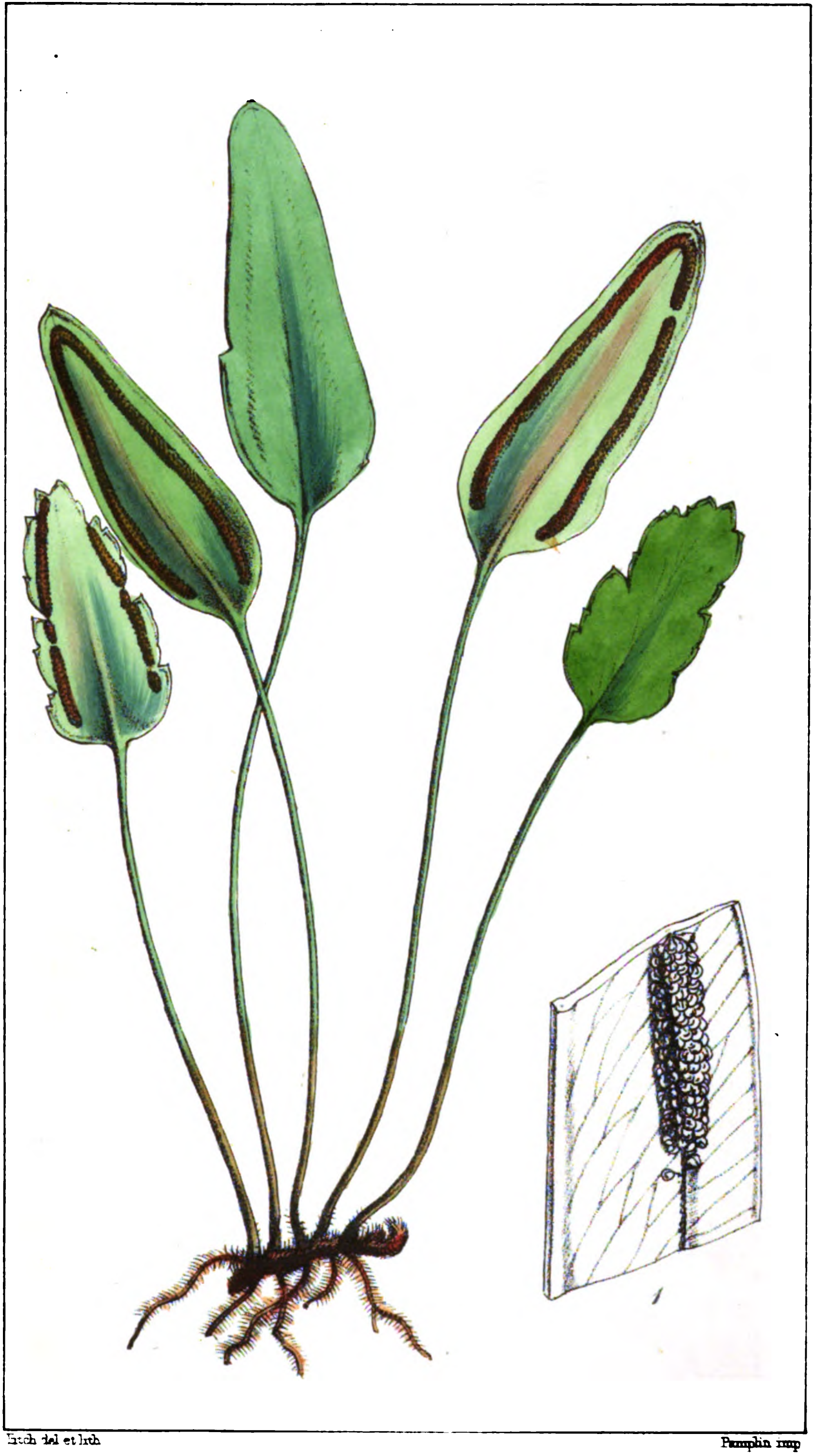
Glabra coriacea nitida, frondibus simplicibus oblongo-ovatis obtusis brevissime mucronatis, soris intra marginem incrassatum et costam continuis (infra apicem etiam) vel interruptis, stipite gracili filiformi basi piloso, caudice repente crinito.

Hab. Borneo, near Sarawak, *Mr. Thos. Lobb.*

The genus *Tænitis* has been of late properly considered to be confined to one species, *T. blechnitis*, and that is a pinnated species. Our present plant is a true *Tænitis*, with a simple frond, and quite entire at the margin, except from the effect of injury. In all our fronds too, where the apex is uninjured, the two lines of sori are united or continuous within the apex, the only portion invariably free from sorus being at the very base. The plant is peculiarly rigid and coriaceous, glossy, the margin thickened. The caudex is creeping, but rather slender, and clothed with dark brown, glossy, crinite scales.

Fig. 1. Portion of a fertile frond:—*magnified.*

Tab 94.



Fitch del et lith

Pamplin imp

TAB. XCV.

OPHIOGLOSSUM INTERMEDIUM, *Hook.*

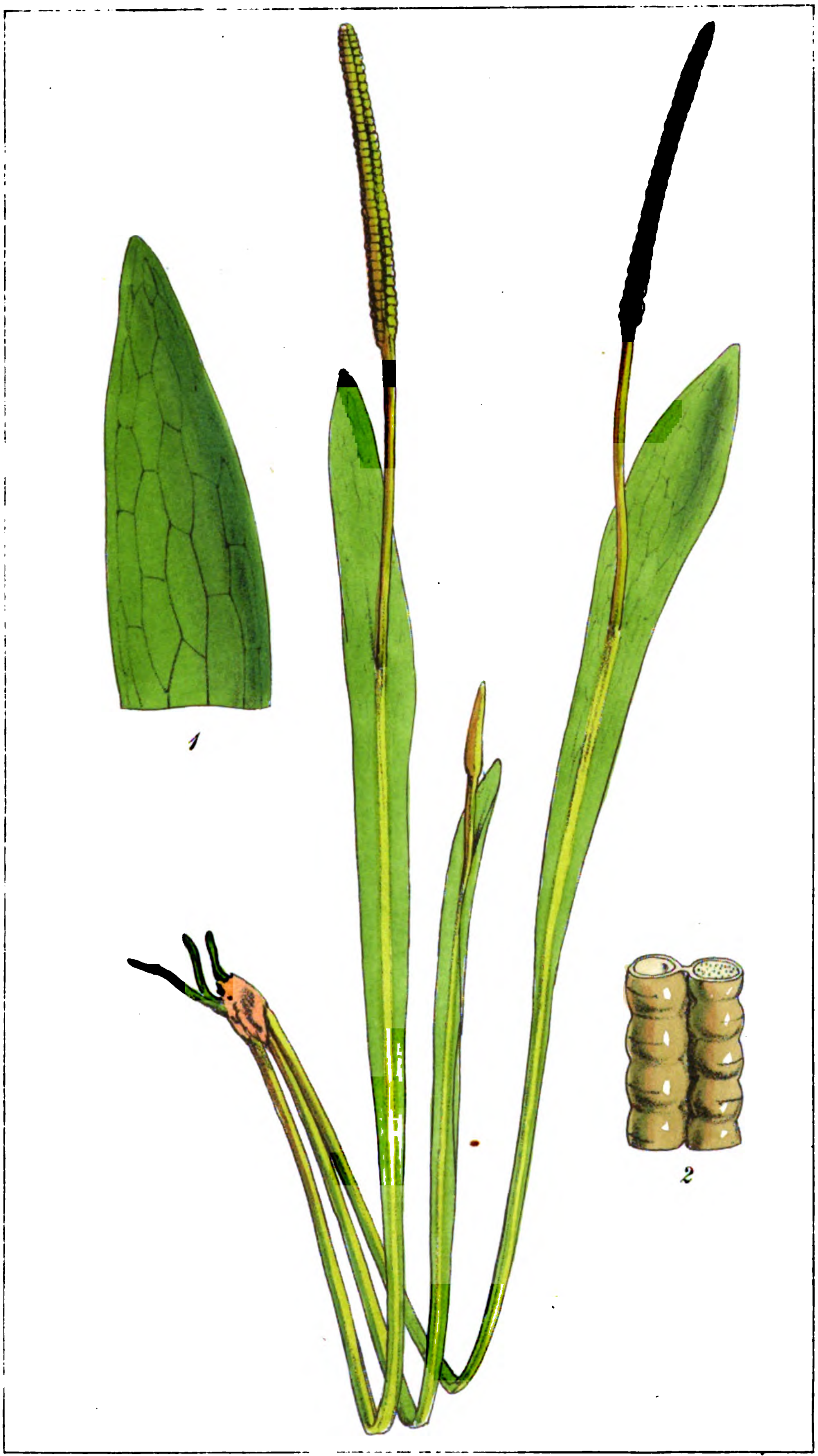
Frondibus erectis membranaceis reticulatis elongato-lineari-spathulatis in petiolum longiusculum sensim attenuatis indivisis, pedunculo spicam æquante apicem versus frondis medio affixo.

HAB. Borneo, near Sarawak, *Mr. Thos. Lobb.*

My only specimen of this *Ophioglossum* is that here represented, where three fronds arise from one small but somewhat tuberous root, and the plant seems to be terrestrial and to grow erect. Were it an epiphyte and a pendent frond, the species might be supposed to be a form of the *O. pendulum* (see Hook. et Grev. Ic. Fil. Tab. 19); but here is no disposition in the frond to be dichotomous; and the narrow stipes of our present plant, the elongated peduncle and the situation of the peduncle (itself as long as the spike) forbid such a supposition. The membranaceous texture is in favour of its being the same as *O. pendulum*; and it may be considered to hold an intermediate rank, between the terrestrial erect and the epiphytal pendent species.

Fig. 1. Apex of a frond. *f.* 2: Portion of a spike;—*magnified.*

Tab 95.



Fitch del et lith

Pamplin. imp

TAB. XCVI.

Drymoglossum rigidum, *Hook.*

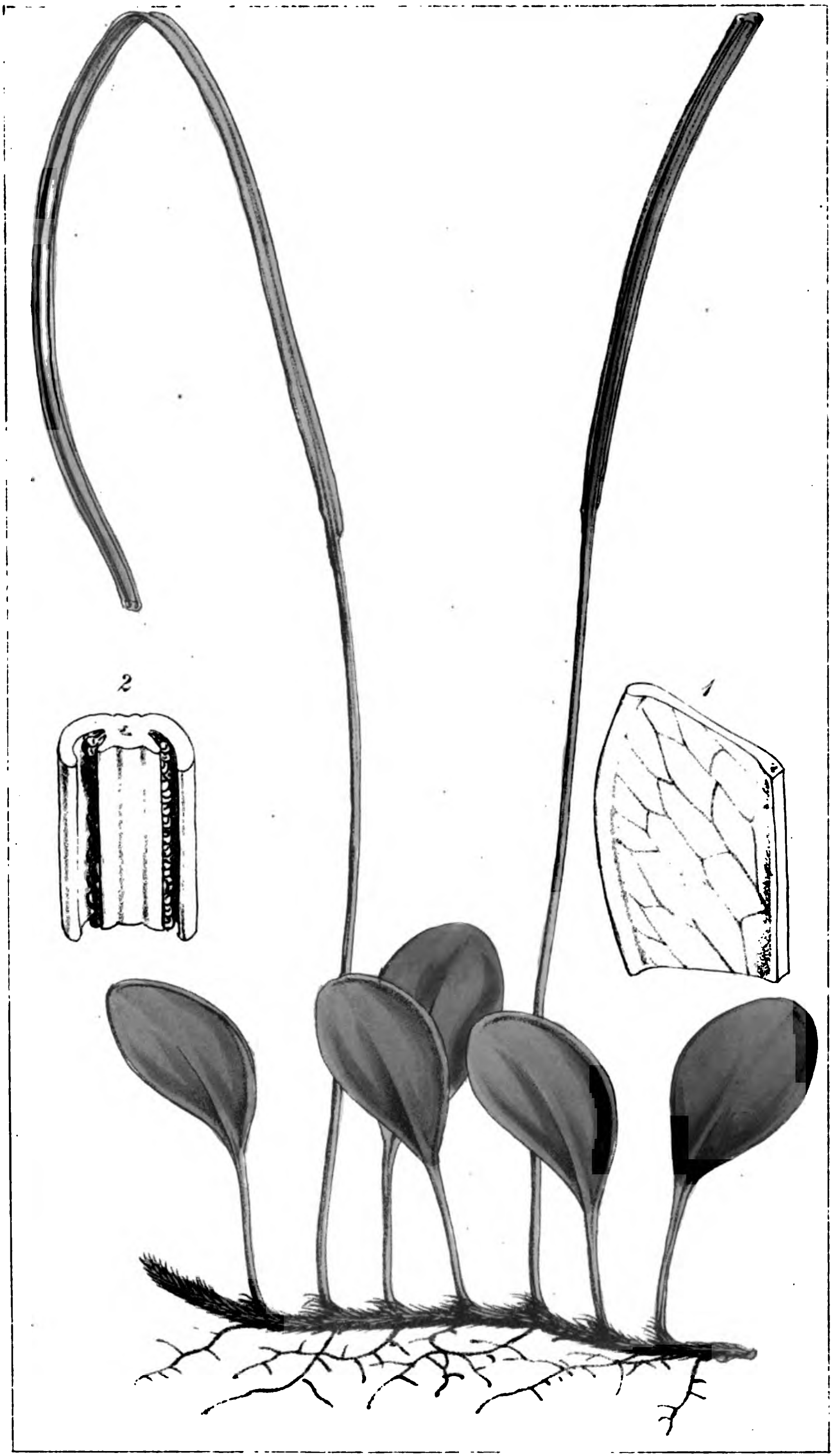
Glaberrimum, frondibus sterilibus obovatis in stipitem æquilongum attenuatis costatis marginibus incrassatis nitidis, fertilibus longissimis linearibus crassis, stipite subæque longis, soris profunde immersis, caudice repente elongato squamoso.

Hab. Borneo, near Sarawak, *Mr. Thomas Lobb.*

A species of *Drymoglossum* extremely different from any hitherto described, remarkable for its thick, firm, coriaceous shining, obovate sterile fronds, incrassated at the margin, tapering into a rigid stipes as long as the fronds. The fertile frond, including the stipes, exceeds by many times the length of the sterile fronds with their stipites, and is also peculiar in being very narrow and very thick (almost semiterete), having a deep furrow on each side the costa, in which the sori are sunk. The veins anastomose, but the areoles are not appendiculated.

Fig. 1. Portion of a sterile frond. f. 2. Portion of a fertile frond; *magnified.*

Tab 96.



Fitch del et lith.

Pamplin imp

TAB. XCVII.

TRICHOMANES PLUMA, *Hook.*

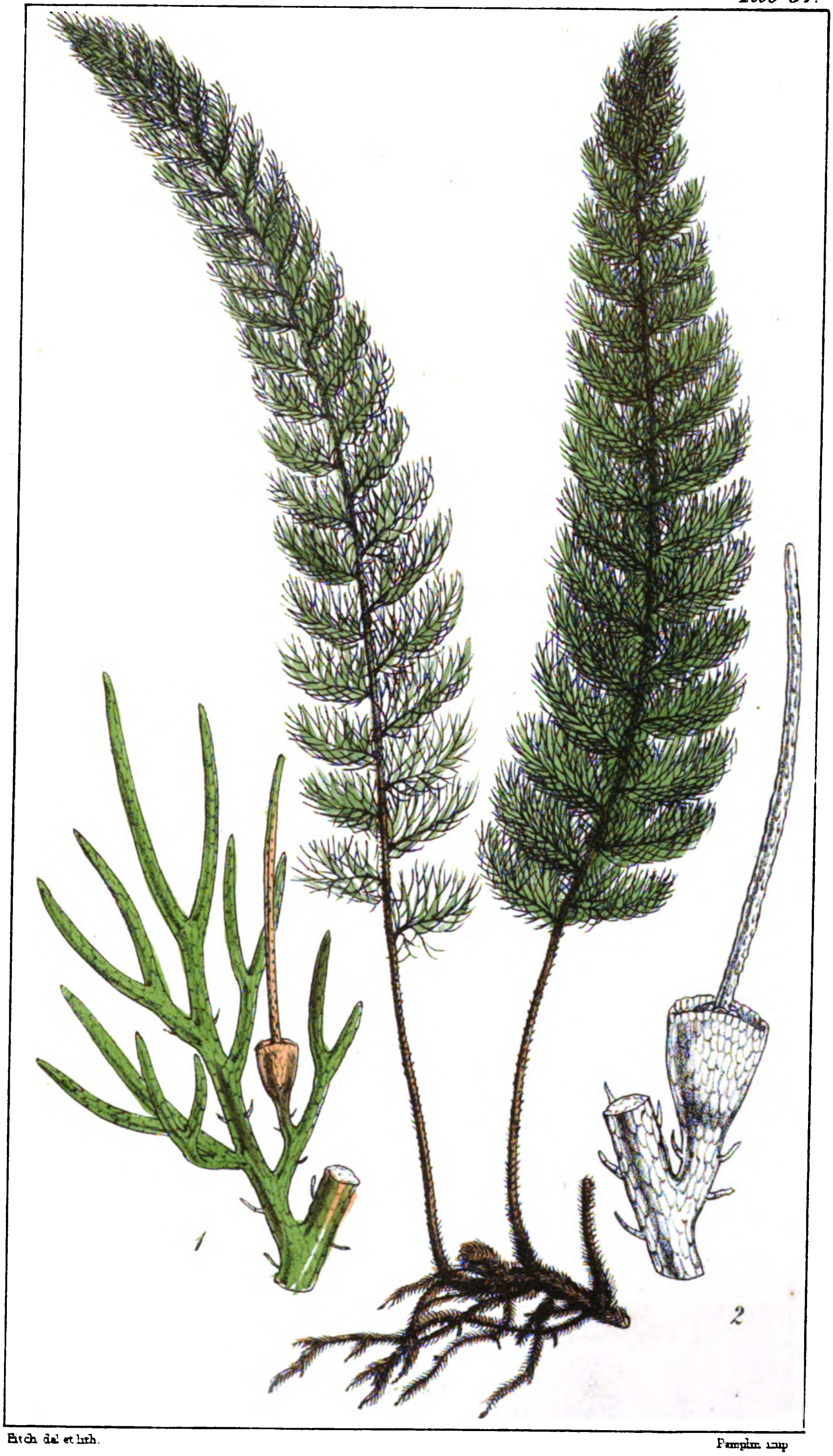
Hispidulo-scabra, frondibus lanceolatis sublongo-stipitatis nigris decomposito-pinnatifidis, laciniis teretibus filiformi-subulatis confervoideis reticulatis, involucris versus apicem frondis præcipue sitis parvis cyathiformibus in ramulis brevibus terminalibus, receptaculo longissime exserto, soris inclusis, caudice repente setaceo-squamoso.

HAB. Borneo, near Sarawak, *Mr. Thomas Lobb.*

This is only one of the many extremely interesting plants in a collection, for which I am indebted to Mr. Veitch of the Exotic Nurseries, Exeter and Chelsea, made in Borneo by Mr. Thomas Lobb. The first aspect of this plant is quite that of a *Sertularia*, especially of the well known *Sertularia Pluma*. A more close inspection will show it to be a true *Trichomanes*, with the ramification so fine that when magnified it resembles the branches of some confervoid marine Alga, particularly the Genus *Ceramium*: the branches are minutely reticulated and here and there beset with short bristles or rigid hairs: the pinnæ or segments (for it is difficult to say whether this ramification should be called pinnate or pinnatifid) do not spread in two opposite directions (distichous), but stand out as it were, on all sides so as to form a thickened mass, in that respect also resembling the *Sertularia* in question and certain *Ceramia*. The involucres are particularly small for the size of the plant, and the columella or receptacle is unusually long and stout.

Fig. 1. Portion of a fertile branch. *f.* 2. Involucre and receptacle :—*magnified.*

Tab 97.



Fitch del. et lith.

Pamplin imp.

TAB. XCVIII.

GRAMMITIS BISULCATA, *Hook.*

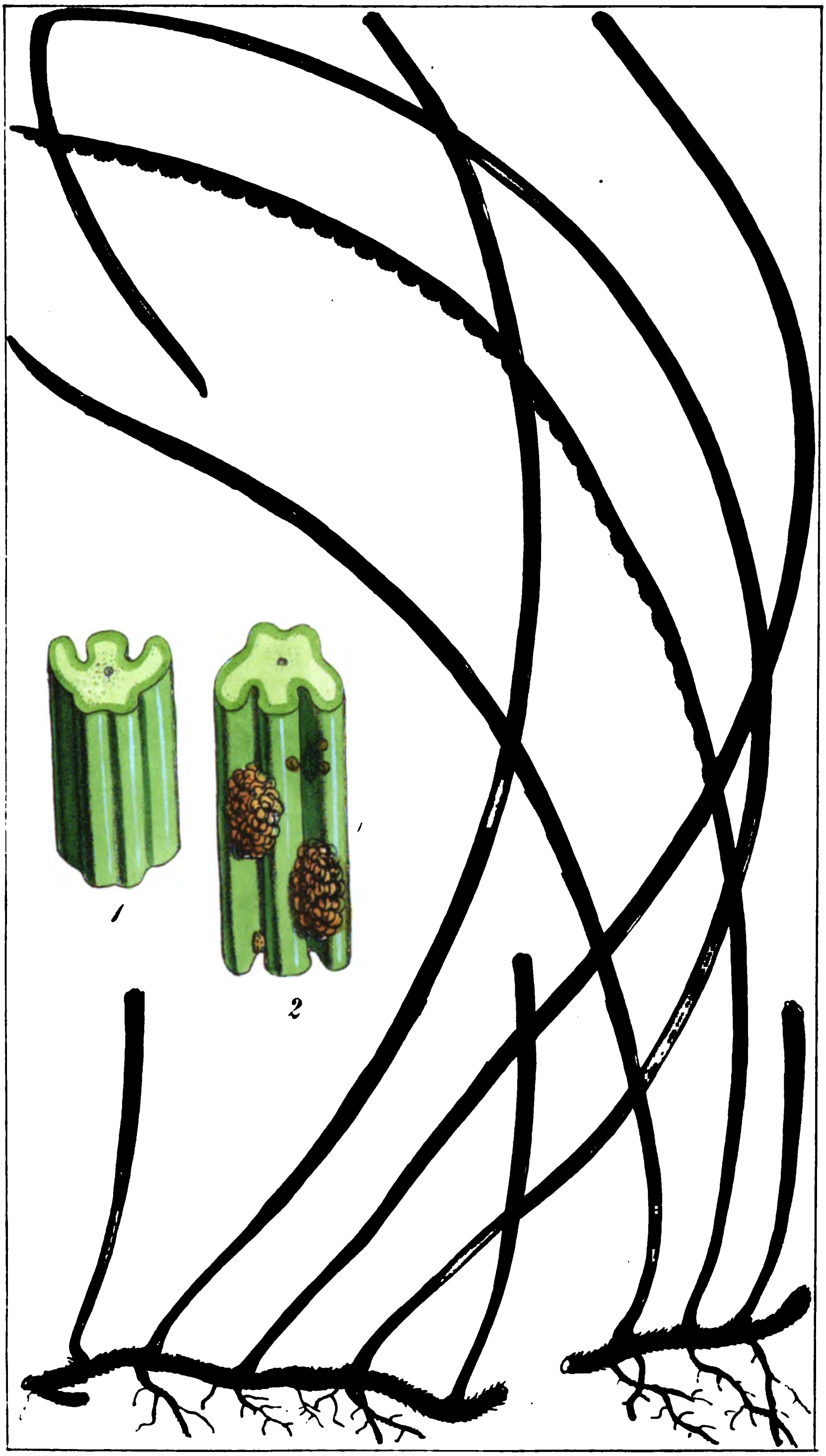
Frondibus sparsis anguste lineari-acuminatis curvatis rigidis inferne in petiolum attenuatis subsemiteretibus enerviis antice profunde bisulcatis sulcis soriferis, soris ovali-oblongis prominentibus, caudice elongato filiformi repente squamoso.

HAB. Borneo; near Sarawak, *Thos. Lobb.*

There is no appearance of venation in the harsh, rigid fronds of this Fern. A transverse section (fig. 1. and 2.) shows them to be nearly semiterete; the flatter side is marked with two deep furrows in which are situated the sori, the convex side has three shallow grooves. The caudex is long and creeping, everywhere clothed with scales, throwing out roots from below, and bearing the distinctly placed fronds on the upper side.

Fig. 1. 2. Transverse sections of a fertile frond:—*magnified.*

Tab 98.



Fitch del et lith
Pamplin imp.

TAB. XCIX.

HYMENOLEPIS PLATYRHYNCHOS, *Kze.*

Frondibus cæspitosis elongatis sublorato-lanceolatis coriaceo-membranaceis costatis basi in petiolum brevem attenuatis, appendice terminali fructifera oblonga plana, soro oblongo amplo elevato discum occupante, caudice crasso descendente squamoso.

Hymenolepis platyrhynchos. *Kze. in Schkh. Fil. Suppl. p.* 102.

Gymnopteris platyrhynchus, *J. Smith, in Hook. Journ. Bot.* 3. *p.* 403.

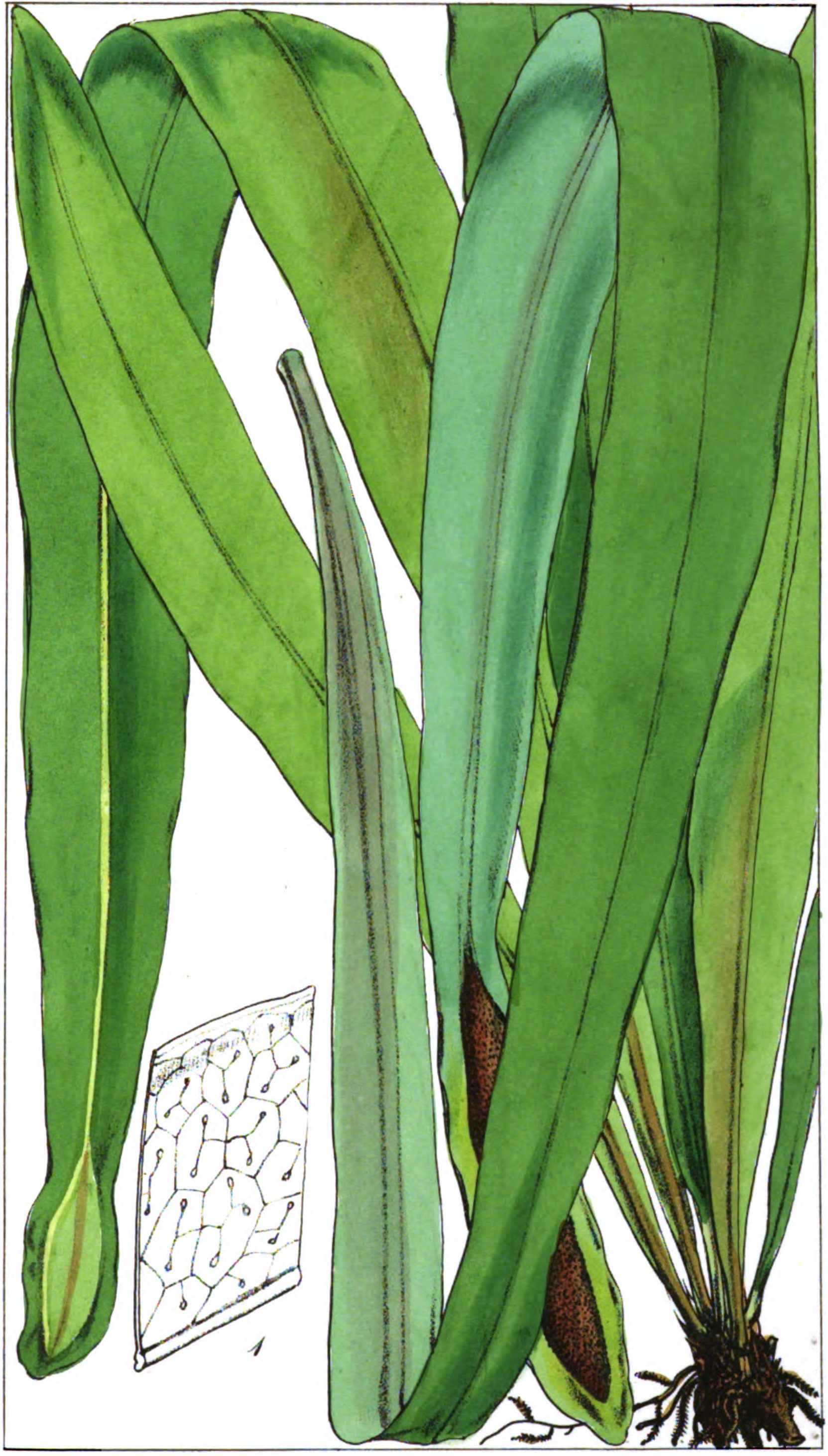
Macroplethus platyrhynchus, *Presl, Epimel. Bot. p.* 142.

HAB. Luzon, *Cuming, n.* 196.

This fine and apparently very rare Fern (for hitherto it has been found only by Mr. Cuming) was first named by Mr. J. Smith *Gymnopteris platyrhynchus*, a genus from which it differs widely in habit, in the monomorphous fronds, and in the limited mass of fructification. Kunze has, as it appears to me with more propriety, referred it to *Hymenolepis*, which indeed Presl united with *Gymnopteris* in his "Tentamen Pteridographiae," but which it may be presumed he now retains, since in his remarks upon *Macroplethus*, a genus destined for our present plant, he says, "differt ab *Hymenolepide*, quacum venis venulisque accedit, soro sub apice frondis centrali solitario elliptico, margine frondis plano undique cincto, receptaculo elliptico non solum parenchymati sed quoque costæ insidenti." Even M. Fée cannot assent to these views, and he arranges the species with *Hymenolepis*.

Fig. 1. Sterile portion of the frond, showing the venation. —*magnified.*

Tab 99.



Fitch del et lith

Pemplin imp.

TAB. C.

ASPLENIUM (Darea) OBTUSILOBUM, *Hook.*

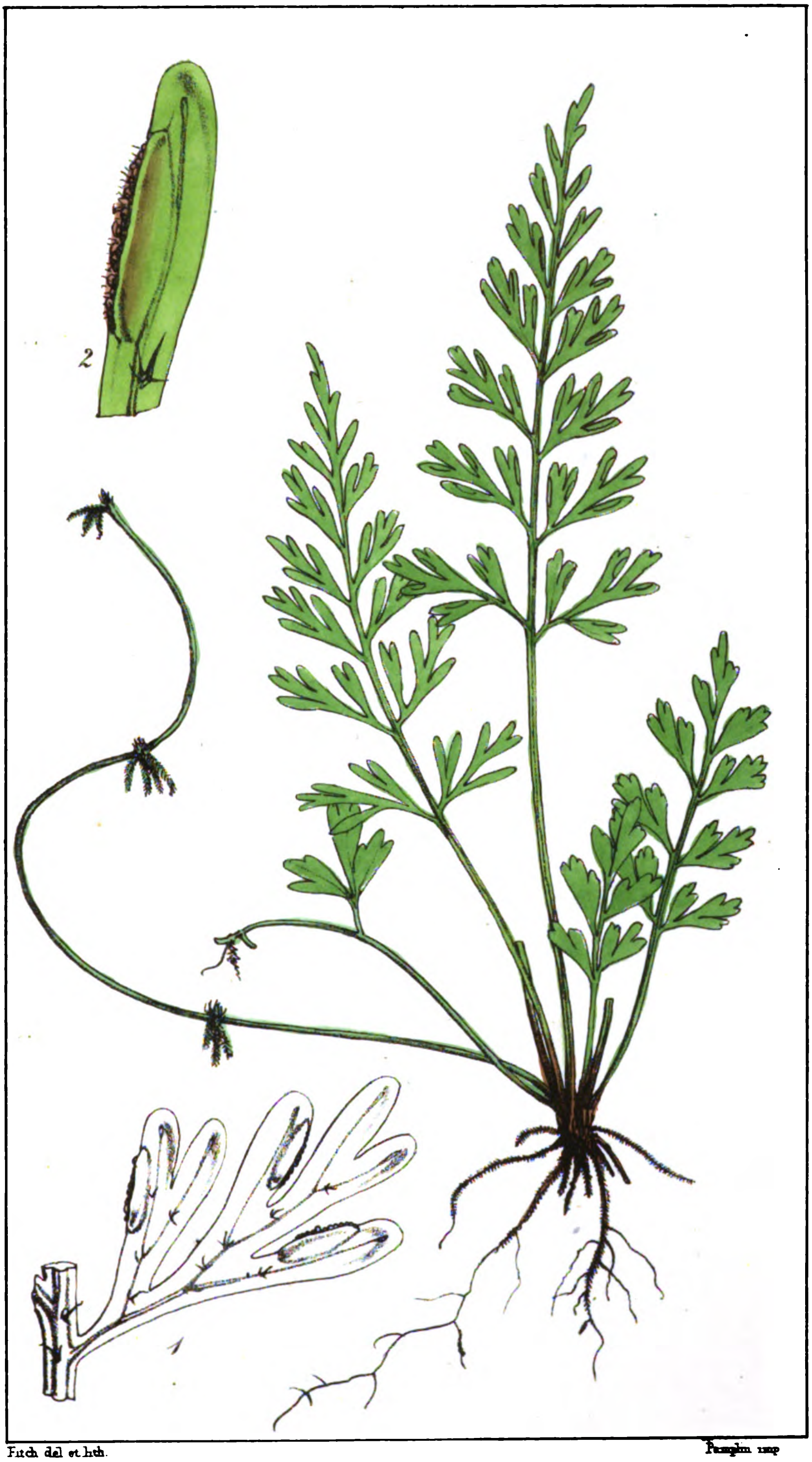
Parvum cæspitosum sparsim stellato-pilosum, frondibus erectis ovato-lanceolatis pinnatis, pinnis petiolatis bipinnatifidis lobis lineari-cuneatis obtusis integris vel bifidis costatis (seu univeniis), vena ante apicem evanescente, involucris solitariis omnino marginalibus exterius dehiscentibus, stipite rachique compressis alatis, radice fibrosa stolonifera.

HAB. On the ground in shady places, Island of Tanna, New Hebrides, *Mr. C. Moore.*

The scattered, branched, stellated hairs of this little plant are invariably confined to the rachis and veins of the frond. As a species it appears very distinct.

Fig. 1. Pinna, with sori. *f.* 2. Single sorus:—*magnified.*

Tab 100.



Fitch del et lith.

Pamplin imp

NOV 23 1981

J. HOLZER BINDER